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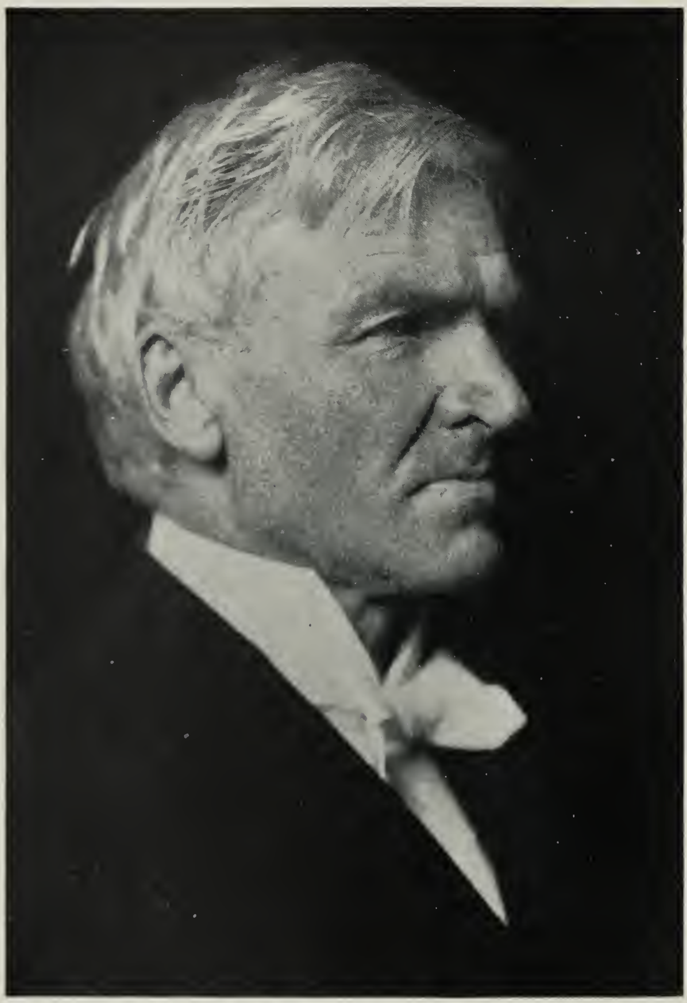

Photographed by CAIRNS, Newark, N. J.

PORTRAIT STUDY.

ANTHONY'S

Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D.

W. I. SCANDLIN.

Vol. XXXI. JANUARY, 1900. No. 1.

ELIMINATION OF HYPO FROM NEGATIVES.

SEVERAL articles have lately appeared in the foreign journals regarding the amount of washing necessary in order to insure the thorough and absolute elimination of hypo from the film, in order to do away with any possible discoloration of the negative in case it is subsequently treated for intensification. One writer on this subject, Dr. E. Vogel, claims that a long washing is not nearly as important as is thorough fixing, and says that if ordinary plates are thoroughly fixed in a liberal quantity of fixing bath, which should be kept clear and fresh by frequent renewal and filtering as it becomes old, and are left in the bath a few minutes after they are apparently fixed, a washing of from five to six minutes only in running water is necessary before intensification. With plates having an unusually thick film, a longer fixing and washing would both be necessary. Another authority, v. Beck, seems to hold to the same view, and has published the result of some elaborate experiments, by which he demonstrates that a plate which, after a most thorough washing, had been soaked in a solution containing only 1 part of hypo to 10,000 parts of water, and subsequently intensified with uranium, contained enough hypo to be plainly apparent in red and brown spots, and its effects were still noticeable, even after the bath had been diluted to the extent of 1 part hypo to 16,000 of water. He further shows that there is danger of discoloration if as small a proportion as 1 to 20,000 parts remain, and demonstrates that, to reduce the quantity present in an ordinary negative to that point, it is necessary to use the equivalent of 1 cubic centimeter of water to each square centimeter for six hours, changing the water three times during the washing. From this basis he formulates a table showing that, as the number of changes of water is increased, the time of washing may be reduced.

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This table, which is very interesting, we append, and by it Dr. Vogel's theory seems to be sustained, inasmuch as ten changes in five minutes would be practically equivalent to the use of running water.

In this table the writer holds that—

3	times changing	in	2 hours	is equal to	6 hours'	washing.
4	"	"	1 hour	"	4 "	"
6	"	"	½ "	"	3 "	"
7	"	"	¼ "	"	1¾ "	"
10	"	"	5 minutes	"	50 minutes'	"

If the above theories are correct, and a washing of five to six minutes only is required to wholly eliminate the hypo from the film, it would seem to prove that a large number of photographers, both professional and amateur, fail to fix their plates sufficiently before washing, for, we take it, there are few experienced workers who would think of washing a plate less than that time, while the tendency to remove the plate from the fixing bath to the washing tray or box as soon as the last trace of white has left it is a common one. The lesson to be applied seems to be that an excess of time be given to both fixing and washing, rather than the reverse; and if the darkroom is provided with a reasonable supply of fixing and washing baths, it should be an easy matter to provide against the danger of stained negatives, which forms one of the most annoying of a photographer's many worriments.

Dr. Vogel advises, after washing and bleaching in bichloride of mercury, another washing of, say, six minutes, after which the plate may be blackened with ammonia without fear of stain. If, however, the plate is to be blackened with sulphite of soda, a washing, after bleaching, of only half a minute in running water is sufficient, in his opinion. He also suggests the addition of a little chloride of sodium to the mercurial intensifier in the proportion of—

Mercury bichloride..........................	20 grams,
Sodium chloride.............................	40 "
Water	1,000 cubic centimeters,

claiming not only that the action of the intensifier is quickened by its use, but also that it aids materially in the washing out of the superfluous bichloride of mercury from the film before blackening.

EXPLANATORY AND APOLOGETIC.

EDITORIAL reference in last month's BULLETIN would seem to stamp its writer, Mr. Scandlin, with gross ignorance in relation to the century in which we live and the year in which the century ends. The BULLETIN feels sure, however, that its readers are fair minded enough to believe that it was purely and simply a slip, and not absolute stupidity. We admit that slips are bad enough, but unfortunately we are all more or less likely, once in a while, to experience them, as in the present case. We submit, however, that our regret is equal to our offence, and hope that the above explanation may absolve us.

OBITUARY.

IT is with deep regret that we announce the death of Benjamin L. H. Dabbs, of Pittsburg, who passed away on December 13th, at his home, after a complication of diseases, lasting many months, had sapped his life.

Mr. Dabbs was, perhaps, one of the best known and most highly esteemed members of the profession, and his loss will fall heavily on all who have been associated with him. He was born in England, November 30, 1839, and came to this country in 1845.

In 1861 he opened a studio in Pittsburgh, since which time, until May last, he has devoted himself entirely to his work, and established an enviable reputation. His sitters have included many notable people of this and other countries. He leaves a wide circle of friends and relatives to mourn his loss.

* * *

William Walden, who died on December 10th, in this city, had been employed by our publishers, E. & H. T. Anthony & Co., for the exceptionally long period of forty-five years in active service, and for the past two years had been on the pension list of the house. It is seldom that a longer term of service in one house can be pointed to in these days of change and unrest, and the faithfulness with which Mr. Walden performed his duties is not in the least exceeded by its length.

* * *

Notice is received of the death, on November 20th, of Mr. Thomas T. Mahan, of Atlantic City, at the advanced age of seventy-seven years. Mr. Mahan was for many years associated in business with Mr. Jonathan Good, on Market street, Philadelphia, and is widely known as a photographer and daguerreotypist of the old school. He leaves many friends and a large circle of relatives.

* * *

James H. Proctor, a well-known photographer of Baltimore, died on December 9th, in the fiftieth year of his age. Mr. Proctor had been established in Baltimore for nearly twenty-five years, his first gallery being on North Gay street, where he built up a very successful business. A widow and two children survive him.

* * *

Mr. Charles E. Hayes, of New Haven, who has for the past few years been connected with the Mystic Island House, at Mystic, Conn., but who for twenty years was well known as a popular photographer of New Haven, died on December 10th, after an illness of three years, leaving a mother, widow and one son.

Items of Interest

NEW YORK CITY is to be represented at the Paris Exposition by a relief map of the Greater City, which is reported to be now in process of construction by the City Engineer's Department, and which is to measure 24 x 28 feet when completed. In connection with this enormous map it is proposed to display a large number of photographs and drawings of the most prominent buildings at present erected and under way. It is said that $10,000 has been appropriated for the relief map alone.

If the expectations of the young Polish scientist, Szczepanik, are realized, the necessity of relief maps, and even photographs, as they are now produced, will cease to exist before the lapse of many years, as he is reported in the lay press to have perfected a long-distance "Sight-Seer," which he will exhibit at the Paris Exposition, and by the aid of which he expects to show to 8,000 people at a time, if his seats are all taken (the best ones only cost $4 apiece), moving pictures of life in distant cities in full color and action. As the scenes are flashed upon the receiving camera they are ingeniously telegraphed by a series of "vibrating mirrors," etc., and, through the "persistence of vision" in the human eye, etc., the rays will finally reassemble themselves and form the wonderful picture that is promised. The name which has been given to this remarkable invention is the telectroscope, and we wait with interest further details of its construction and actual performance. Many of the terms used in describing it are quite similar to those that have been employed in describing other inventions which have thus far not materialized, but the announcement that "the long-sought problem has at last been solved" must, of course, settle the matter. What a pity for science that so many theoretical perfections have to be spoiled by practical impossibilities.

Mr. H. William Tupper, who for twenty-five years has been manager of Pach's studio in Cambridge, Mass., is as well known and popular a man as may be found in the grand old city of Harvard fame, and the recent painful accident he experienced in being thrown from a rapidly moving automobile must have seriously shocked his frame, even if no more permanent injury was done him.

To a man of Mr. Tupper's age an accident of this kind often means more than the first appearance of injury may indicate, and we earnestly hope he may recover his full health and strength at an early day. The source of illumination is not mentioned, but a small detail like that hardly matters, we presume.

A recent application of photography to business uses is to be found in a device lately introduced in connection with the time register, now so familiar in factories, mills and business houses where a large number of hands are employed, and by which the time of arrival and departure of each is recorded by the pressure of a button. The photographic application consists of a camera, lens and film, by which each employee is photographed as he makes his record. The films are said to be developed and printed automatically, and to show, when removed for examination, a portrait of the person who pressed the button, and beneath it the photograph of a clock dial, bearing the date and showing the hands pointing to the exact hour and minute of exposure.

* * *

It is well for all who have anything to do with moving-picture machines and cinematograph films to remember that the films are of a very inflammable nature, and to take all possible precautions, in exhibiting or handling them, that lighted cigarettes, cigars or fire in any form are kept as far away as possible.

The recent explosion in a Buffalo theater, where the film was rolled from the machine into a box or basket, and after exposure rolled back upon the spool, and which, located in the center of the house beneath the balcony, took fire during the operation, presumably from a cigar or cigarette dropped from above, should be a lesson to all not to repeat an operation presenting so many chances for a direful calamity.

* * *

One of the most valuable government exhibits at the Paris Exposition, from an educational standpoint, at least, bids fair to be seen in the very complete series of photographs representing many of the special commercial industries of this country, and views from the fifty-four agricultural experiment stations of the United States, all of which are being prepared and collected by Mr. Charles Richardson Dodge, of Washington, who represents the Secretary of Agriculture in this matter. The prints will all be mounted either singly or in groups on 22 x 28 cards, which will be arranged in classes and enclosed in portfolios, which will be classified and titled, and which will illustrate, among many other things, such industries as the catching and preparing of fish for food; the meat-packing industry, showing in detail its numerous steps, from the cattle grazing "on the hoof" to the shipment of the prepared packages; bee-raising and dairy farming, fruit-canning and tobacco cultivation, and a vast number of other branches of our national industrial life will go to complete this exhibit, which will illustrate, as no other method could, and in a language more universal than any written or printed tongue, the immense resources and the wonderful appliances and adaptability of our country.

* * *

A clergyman in England is said to advocate the use of a camera in the pulpit, by means of which imperishable records could be made, from time to time, of those who allow their drowsiness to overcome their sense of propriety, and who persist in snoozing during service. The idea is a good one, undoubtedly, but how would it do for the clergyman to try waking up? A little more energy in the pulpit might be found much more useful than the camera, inasmuch as it would serve to prevent the offense instead of perpetuating it.

◆

It is rumored in certain quarters that a movement is quietly going on among some prominent amateurs, which has for its object the establishment of a national academy of photography in the East, presumably not far from New York, in which may be found instructors in the chemistry, optics and practice of photography, supplemented, perhaps, by thorough study of the masters of painting, and possibly embodying classes in composition, drawing, design and modeling. Such a project would, we think, be heartily welcomed, and would be accorded a strong financial support if its plan of operation is broad and comprehensive, as no doubt it will be.

◆

Two holiday items of interest to the fraternity are to be noted in the removal of The Falk Photographic Studio from its spacious quarters in West 24th street to its new, commodious and beautiful rooms at the Waldorf-Astoria Hotel, and to the approaching completion and early opening of the Rose & Sands Studio on Fifth avenue. Our congratulations are tendered to each, and we hope that the same, and even greater, prosperity, may attend them in their new localities than in those they have outgrown.

◆

Thefts of lenses from galleries, while not as frequent, perhaps, as in years gone by, still occur, as is evidenced by the fact that within the last few weeks a Dallmeyer 6½ x 8½ rapid rectilinear, No. 53,845, has been stolen from the Pach Studio, and an old-style Voightlander portrait lens, No. 21,485, and a Beck rectilinear, No. 2728, from the studio of George B. Sperry.

Any one coming across either of these instruments will do well to communicate with the parties named or the Bulletin.

◆

The salon of the American Institute Photographic Section, which was open at the gallery of the Institute, in New York, December 4 to December 23, was a notable example of what may be accomplished in getting together a collection of merit and value when it is undertaken in earnest, as this exhibit evidently was. The index of exhibitors includes the names of almost all the prominent workers of America and Europe, and the examples of their work shown on the walls of the gallery give ample reason for the eminence attained by their makers.

It is seldom that such an excellent opportunity as this has been afforded for viewing the work of so many artists, and the management is to be congratulated upon the result of its undertaking.

CAPTAIN ABNEY ON THE THICKNESS OF FILMS AND THEIR SENSITIVENESS.

Communicated by Rev. F. C. Lambert, M.A.

"WHENEVER Captain Abney discourses on photographic matters we may always rely upon his opinions being well backed up with skilfully made and acutely observed experiments. The reader must not measure the far-reaching importance of the subject of this note by its brevity, as we can only give a very condensed *résumé* of what Captain Abney said at the Camera Club (London) on October 12th on the above subject. General experience and preference is in favor of liberally coated plates or films. This is supported by the following experiments. Light falling on a thin sensitive film is part reflected, part absorbed, part transmitted. The latter passes through, and is so much loss to the plate. Experiment: A flexible film (such as a Kodak film, or similar preparation) is cut up into strips. Taking a sensitive plate we lay a film strip on it. On this another strip, but not fully covering the first. On the second a third is laid, but again not quite covering the second, and so on. Thus, the plate film is covered by one, two, three, and so on, up to six thicknesses of film. Next, this plate is exposed with the backing of one, two, three, etc., thicknesses of film pressed into close contact. Then the films are separated and developed. Exposures of five, ten, twenty, etc., seconds are made. Each exposure double the last, till we get ten steps, ending with forty-two minutes forty seconds. Then, after development, the densities due to the light action passing through the various thicknesses are measured by means of a Warnerke annulus. Out of 100 parts of light falling on the first film 20 of these passed through and reached the second film. Of these 20 parts 17 parts performed image-forming work, but the other 3 parts passed through the second film and reached the third film. Of these 3 parts only a small fraction passed through to the fourth film. In fact, only $\frac{1}{4}$ per cent. of the original incident light got through three films and reached the fourth one. From the above it follows that if this film permits 20 per cent., *i. e.*, one-fifth of the incident light to pass through without doing image-forming work, then a film of double thickness would be roughly one-fifth more sensitive than a film of single thickness.

"On the one hand, had the first film contained half the present quantity of silver haloid it would have allowed 42 per cent. of the incident light to pass through. But had it, on the other hand, contained about one-third more silver than was used, its sensitiveness would have gone up some 90 per cent.

"Next, as regards the relative penetrative power of the different colors of the spectrum. This subject is of prime importance, and is not yet fully and finally exploited. But roughly speaking, we may say that the first film permits to pass chiefly the blue, yellow and green rays. The second passes some blue—more yellow and green. The third also permits some green to get through. Green rays are the last to be quenched."

SLOW *v.* RAPID PLATES FOR LANDSCAPE.

By Captain W. de W. Abney, C. B., in "Photography."

THE other night at the Camera Club a question was raised whether slow or rapid plates gave the best gradation for landscape work. One experienced platemaker, for whose opinion we have the greatest respect, maintained that a slow plate gave better gradation, while the writer maintained the reverse. Both sides had looked at it from a theoretical, or perhaps it would be better to say a sensitometer, point of view, and whether the two parties were at cross purposes or not is difficult to tell.

The writer maintains his opinion on the following grounds. If we place two plates, one a rapid and the other a slow plate, side by side, and expose strips of the two together by means of a movable mask to an artificial light, the first exposure being, say, one second, the next two, the third four, and so on, till perhaps we have an exposure for the last one of eight minutes thirty-two seconds, and develop them, together by preference, we shall find, of course, that the slow plate will show a fewer number of strips with any appreciable deposit on it. We can, however, measure the opacities by any means we like, and we shall find that the differences in opacity of the successive strips are greater in the slow plate than in the rapid. The opacities of the most exposed strips in each may be different, and probably those of the rapid plate will be considerably less dense than that of the slow plate, but in each we shall probably find that there is one strip near the beginning which shows that the time has been too short for any deposit to be apparent.

Now, as the writer has often stated, the printing density of any negative is limited. We may take it that when one-fiftieth of the incident light is cut off by the opacity, that, and bare glass are the limits that will print on a paper such as platinum. If, then, we take the number of strips between these values as found on the rapid and slow plates, we shall find that the number of intervening strips in the rapid plate between these values is larger than it is in the slow plate.

This means that a greater difference of exposure is rendered printable in the former than in the latter, that is to say, bigger differences in the lights of a landscape will be shown in a print by the former than by the latter.

It was explained by the opposition that an exposure might be given to a plate far exceeding the "correct" one with the slow plate, but not with the rapid, and with the former a negative would still be obtained which would give the same perfection of print as if the exposure had been correct. The "straight part" of the curve, which on Hurter and Driffield's plan is assumed to give the correct exposure, was stated to be the reason.

The writer states once again, as he often has before, that the exposure lying on that straight part is only a portion of that of use to the photographer, but that the part which indicates small exposures and which is not in straight line is equally useful.

What the photographer requires is bare glass to an opacity, cutting off, say, one-fiftieth of the light, and that is not obtainable on the straight part of Hurter and Driffield's curve (except in very rare plates perhaps). In any case the gradation is, from these experiments, far better in the rapid than in the slow plates, provided the above opacity is obtainable in the former, which is not always the case.

A striking instance is one that is afforded this year in the work of a distinguished amateur who photographed in the Alps for a good many seasons. Last year his snow views with low, level foregrounds were rather hard, and what they would have been had he not been an expert one can scarcely say. The contrasts were too harsh, and there was a want of detail in the highest lights and in the dark shadows. This year the prints are delicate and full of half-tone and detail throughout. The negatives in both years are really good negatives, but last year's too dense. The amateur confessed that this year he had used much more rapid plates than last.

This experience is also the writer's on practical as well as theoretical grounds. But when using rapid plates care has to be taken that they will give sufficient density in the highest lights, which, as before stated, is not always the case. It may be remarked that if platemakers would use sufficient iodide in the emulsions equal rapidity can be obtained, but with an increase in density. Plates made of pure bromide are apt to suffer in density-giving quality if their rapidity is pressed to a maximum. It is, perhaps, somewhat against the use of a rapid plate that latitude of exposure is a great deal more wanting in it than with a slow plate. It will not bear five or six times the correct exposure, for it is apt to begin to show reversal, and then the high lights become feeble and bad.

This again is specially the case with pure bromide, and is not so much the case when iodide is present, even in small proportions. For hand exposures a very quick plate is difficult to use for reasons which are quite apparent.

An exposure of a duration much less than a quarter of a second it is difficult to give by hand, and if the proper exposure with *f*/16 for a view with such a plate is one-fiftieth of a second, to increase the exposure to a quarter of a second means diminishing a stop to nearly *f*/60, which is the limit to which a stop should be taken if diffraction phenomena are to be avoided. A plate which with *f*/16 requires one-tenth of a second is still a rapid plate under the same conditions of lighting, and here the stop need not be reduced beyond *f*/32 to bring the plate into the category of those which are suitable for hand exposure.

But why use the hand at all? The stand camera can have a shutter attached just as well as can a hand camera, and one photographer we know, who is also a celebrated painter, realizes this, and hence gives shutter exposures; most of his productions are of rare beauty and full of delicacy, and he always uses a brand of rapid plates.

When copying a map or a plan the slowest plate obtainable is to be recommended, for the very reason that it gives great contrast in rendering black and white, but our advice to the landscape photographer is to use a quick brand, when once he is satisfied as to the sufficiency of their density-giving powers, in preference to all others.

When a variety of landscape is to be met with, and when gray sky and no sunshine illuminate the picture, the slow plate will be the better kind to employ, but with most it is an article of faith not to photograph under such conditions, though it is one of the favorite conditions which the painter likes. There is reason for this, as the painter has color to deal with, and the photographer has not, and a cloudy day when color is to be depicted is more favorable for effects of color than when all is more or less deprived of hue by brilliant lighting. The difference between a high light illuminated by the sun and that merely by a gray sky is immense, while the shadows which are usually illuminated by the sky in both cases remain not far different. The rapid plate will therefore give a flatter picture with the gray sky illumination. The drift of these remarks will be seen to be that with hand cameras always use a rapid plate, and with stand cameras use them as a rule, but keep some slow plates for special purposes.

THE CAMERA A COLLECTOR OF DATA.

By E. G. Tabor.

(*Illustrations by the Author.*)

[From "The International Annual," Volume XII.]

IN an article in Volume X of the " International Annual " I attempted to convince collectors of the usefulness of cameras in field collecting. Since that time a work written by R. Kearton, F.Z.S., of England, has come to the hands of some of the collectors, and the illustrations it contains show that the camera is a collector of certain data, of which, for exactness, amount and comprehensiveness the ordinary written data come far short.

Data of to-day are of two kinds, viz., written and illustrated. The written data are records, and give the date of collection, where collected, name and sex of the specimen, and perhaps brief remarks on capture or identification of same. Illustrated data are photographs, and show the live specimens in Nature's haunts, surrounded by their natural environments, and you learn from them either natural attitudes, how or where their homes are constructed, or manner of feeding, any or all of which is of fully as much importance scientifically, and of just as much interest to the casual observer.

In making my illustrated data, I use a reversible-back, long-focus 5 by 7 Camera. The long focus is a necessity, and the reversible back a convenient attachment to your camera for this kind of work. Forty feet of small rubber tubing, with a bulb large enough to work the same, is another necessity not commonly attached to a camera. Of course, this will only be used occasionally, but, if you are a field collector, it will not be a very great while before you will find a chance to use it to advantage. The illustrations reproduced with this article required the use of the first and last of the extras above mentioned.

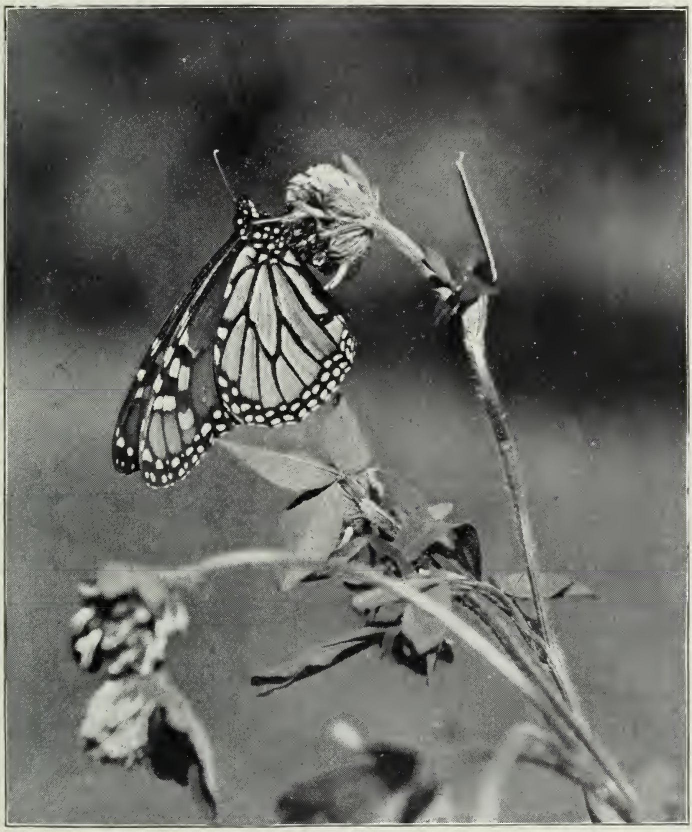
No. 1.

No. 2.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

Illustration No. 1 is of a female Least Bittern in the act of leaving her nest. It was taken from the bow of a rowboat, with diaphragm closed to *F*/16, and an instantaneous exposure with speed at one twenty-fifth second. It is one of the best photographs of a wild bird I have ever succeeded in making.

No. 2 is of two young of the Loggerhead Shrike, just on the point of leaving the nest, three others having already left it. Of course, young birds are easier to photograph than mature birds, as they will allow you to approach quite closely before taking wing. Unless you are using a telephoto lens, you will have to get to within from 3 to 5 feet to get a picture of the smaller birds that will be large enough to give you any idea of their form or appearance.



No. 3.

No. 3 is of a Monarch Butterfly, feeding on the sweets of a clover blossom, and was made as follows: The camera was focused on this bunch of clover, and I waited until the butterfly came and alighted thereon, when an exposure with *F*/16 and one-fifth second was made.

These are but three of the two hundred and over that I have taken in the last three years; but I trust, dear reader, that they will convince you that the camera is a collector of data that an ordinary field collector makes no note of, and that would otherwise be lost, which would be lamentable when we consider the time and money spent each year in the collection of specimens and their data.

THE TELESCOPE OF THE EXPOSITION OF 1900.

AMONG the scientific exhibits at the Paris Exposition of 1900 the great telescope will undoubtedly be the most interesting and important object shown. It consists of a horizontal tube 197 feet long, provided with an objective 4.1 feet in diameter. The image of the moon or stars will be sent through this tube by the aid of a Foucault siderostat; that is to say, by a movable plane mirror. It will be readily seen that with a telescope whose focal length was 197 feet it would be almost impossible to build a dome and mountings which would carry it. It is estimated that a 210-foot cupola would have been required, so the use of a fixed tube and a movable mirror for gathering the image may be regarded as an excellent solution of a mechanical difficulty.

The siderostat is undoubtedly the most interesting part of the instrument. It consists of a large cast-iron frame, and is provided with clockwork and devices for causing the mirror to follow the celestial object which is being viewed. The frame is now under construction at the establishment of M. P. Gautier, the distinguished manufacturer of instruments of precision. It is 26¼ feet long, and the height is the same as its length. It is provided with six leveling screws, which enter into sockets fixed upon a stone base 5.57 feet high. The hour axis is actuated by clockwork through the aid of tangent screws. The part of the instrument towards the south carries the mirror, which is mounted in a cast steel cell lined with felt in order to prevent any contact of the mirror with the metal. The equilibrium of mirror and cell is obtained by means of levers and counterpoises. The base of this mounting floats in a reservoir 6½ feet in diameter, and containing about 16 gallons of mercury. Owing to the application of the principle of Archimedes, the movable part will be relieved of nine-tenths of its weight.

The system of the levers and counterpoises is so well arranged that all of the movable parts can be actuated by hand, even without the aid of the mercury. The total weight of the siderostat is 99,000 pounds; the movable part weighs 33,000 pounds, of which the mirror and its cell weigh 14,740 pounds. A weight of 220 pounds is sufficient to actuate the clockwork.

The mirror has a diameter of 6.56 feet; it is 10.63 inches thick, and its weight is 7,920 pounds, and it was, naturally, the most difficult part of the apparatus to construct. The glass was cast at the Jeumont Works, and a special furnace was constructed, capable of holding 22.4 tons of glass. When the time for casting arrived, the mould, 6.72 feet in diameter and 12 inches thick, was brought to the furnace upon a truck, and then, after being filled, was introduced into the furnace, which had been raised to a high temperature. It was then walled up in this furnace, and the cooling required a month. Notwithstanding all precautions, several of the discs that were cast broke in pieces with a loud noise. The transportation of such a huge disc of glass to Paris was a difficult matter, and a special train carried it there without stopping. A crane deposited the gigantic block on a wagon, and it was carried to the optical establishment at night, in order to have a clear roadway.

To obtain a fine disc of glass ot such dimensions was, of course, difficult, but to give it a perfectly plane surface was a much harder task, and M. Gautier is to be congratulated upon the success which he has attained in performing this difficult operation.

The polishing machine used was placed in a special shop, protected as much as possible from variations in temperature by a double wooden wall. The grinding apparatus consists essentially of a large cast-iron plate, covered with an inch of flannel, upon which the glass disc was carefully laid.

This plate revolves slowly round a vertical axis by gearing, the whole being stepped in a cone. Above there is a stationary circular bronze rubber, 47¼ inches in diameter, which is given a reciprocating motion by a slider, thus passing across the face of the mirror, travelling in a circle beneath it The perfect revolution of the plate and the accurate adjusting of the slides and their parallelism resulted in the production of a perfect mirror. It required three months to adjust the slides alone. The grinding of the mirror was done with a mixture of emery and water.

During this operation a workman always stood at a respectful distance from the apparatus, so as not to change the temperature of it. From time to time he injected a mixture of emery and water by means of a syringe into a channel running through the grinding plate and ending at the center. This work was carried on generally from two to five o'clock in the afternoon, the time of day when the temperature does not change perceptibly. The entire morning was devoted to the cleaning of the machine, and to the verification of the parallelism of the grinding plate with the surface of the mirror, an operation which was performed with four scales, which were accurate to $\frac{1}{1000}$ of a millimeter.

As the grinding proceeded, finer and finer emery was used, and the closer the grinding plate was brought to the surface of the glass. With the finest emery the distance between the plate and the glass was 0.008 inch. The grinding lasted eight months, and was followed by the operation of polishing, which required two months. The lower surface of the polishing plate was covered with a sheet of albumenized paper like that used in photography, but unsensitized. The workmen spread upon this paper a small quantity of the finest Venetian tripoli, and as much as possible was removed with a soft brush. The distance between the rubber and the surface of the glass was 0.0012 of an inch.

This method of treatment, notwithstanding its delicacy, produces enough heat to render the mirror slightly convex and cause it to draw away more strongly in the centre, so that, upon cooling, it was hollowed at this point. In order to surmount this difficulty, the slides were given a curve of which the pitch was 0.4 of an inch. The heat was diminished by operating the machine for a minute, and then stopping for a quarter of an hour. When the hand is applied to the mirror, there occurs an extension of 0.0012 of an inch, which is sufficient to distort completely for four or five minutes the image of the flame of a lamp placed at one side of the plate and observed from the other with a small telescope arranged for the purpose. The next operation is the silvering, and, of course, it will have to be performed anew from time to time. The mirror protudes 5.4 inches from its tube or cell, which will be made to swing so as to bring the surface to be silvered underneath. The reservoir containing the bath will be lifted by means of a winch until the mirror enters it at a proper depth. When the operation is finished, the reservoir will be lowered and the silvered surface turned upwards and the mirror readjusted in its cell.

The images of the mirror which are transmitted to the focus of the objective may be examined directly by means of an eyepiece, or they may be thrown upon a sensitized plate or projected upon a screen placed in a hall set apart for that purpose, so that several thousand people will be able to examine the celestial object at the same time. The tube of the telescope is a steel plate three-quarters of an inch in thickness and 5 feet in diameter. It is made up of twenty-four sections, joined with the aid of bolts. These sections when all mounted will rest upon a cast-iron base supported by stone columns. It is arranged so as to slide to take up the expansion and contraction. The tube plays no part in supporting the objectives in the eye-piece, but it prevents dust from introducing itself between the essential parts of the apparatus.

One of the objectives is designed for visual observations, and the other for photographic work. Both are mounted upon a carriage made to roll upon rails, so that either of them may be easily placed in position before the tube. The weight of either of these objectives without its mounting is about 1,295 pounds, and with the mounting, 1,980 pounds. Each of the crown glasses is carried by rollers, so that it may be separated from the flint in order to render the cleaning of each disc easy. The lenses will cost £24,000.—*The Optician and Photographic Trades Review.*

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All copy for February issue must be in our hands not later than January 15th.

PHOTOCHROMES.

By C. Fleck.

FINELY colored pictures have made their appearance lately in some of the shop windows, looking exactly like chromo-lithographs. Many take them to be colored lichtdruck pictures, and they look very much like them. But they are not, and although the makers seem to consider their product a secret, I think I can give a description of the process by which they are made.

The process—at least in principle—is no recent invention and dates back a good many years. It is based upon the asphaltum printing process under a photographic negative upon the grained stone. At that time the photographic as well as lithographic methods were yet in their infancy, and a later time, in which the asphaltum process came to its present improved state, was destined to introduce practically the photochrome process. It is as follows:

As many stones are grained, as colors are to be employed, a light-sensitive asphaltum solution is poured on them and they are exposed under the same negative, which served for the original. The graining of the stone is done in the ordinary way with glass dust or powdered pumice stone. A coarser grain is obtained by using a fine but sharp sand. The asphaltum solution is made by putting gradually under constant stirring 100 grams coarse Syrian asphaltum powder into 500 grams oil of turpentine, to which are now added 50 grams of chloroform, shaking well at the time, so that no lumps can form. This thick asphaltum varnish is left standing for a day and then 500 grams of ether are added with constant stirring, whereupon the solution is left standing again for a day. Pour off now the old ether and replace it by the same quantity of fresh ether. The latter manipulation should be repeated two or three times, after which the asphaltum is left to dry upon filtering paper. Of the asphaltum, purified in this way, use 3 to 5 grams with 50 cubic centimeters of chloroform and 70 cubic centimeters crystallizable benzole. To give the asphaltum solution more strength of resistance, add 1 to 2 grams Peruvian or Canada balsam. This solution is filtered and is now ready for use. The grained stone is evenly flowed with the same, and, when small, is balanced with the hand. On stones of larger dimensions the solution is distributed by balancing the stone upon a cone or support having a rounded surface on which it may readily be leveled.

It is not advisable to pour a thick solution upon the stone, because it requires a much longer printing time. The prints suffer also in clearness and sharpness. The duration of printing depends upon the character of the negative and the intensity of light. A normal, so-called brilliant negative prints:

In the sun in..	30	minutes.
In diffused light in	180	"
In electric light in..	60	"
In acetylene light in..	45	"

The developing is done by flowing the moderately warm stone with French oil of turpentine. For overprinted stones use rectified oil of turpentine. A brush may also be used for the shadow parts. The opening of the film upon the developed but dry print is as a rule done with Ossa sepia or pumice stone powder. It is also recommended to put the completely undeveloped print in the sun, to strengthen the same, so that it will give a greater resistance to the etching liquid. The lithographer removes everything by scraping, grinding and etching, that does not belong to the respective color, and adds and improves with chalk or India ink, where required. Claret, vinegar, muriatic and nitric acids are used as etching mediums, but the latter are only applied on prints dusted in with resin or talcum. The following etching liquid is very good:

Nitric acid	3	cubic centimeters,
Muriatic acid	2	"
Gum Arabic solution (strong)	50	"
Water	50 to 100	"

according to strength of print.

The further treatment of the stone is known to every experienced stone printer and requires no description.

Translated by
HENRY DIETRICH.

LANTERN SLIDES ON ORDINARY BROMIDE OF SILVER GELATINE PLATES.

By Dr. E. Vogel.

FOR the production of diapositives for projection purposes, chlorobromide of silver plates are now generally used. They have the advantage that they work with extreme clearness and will not fade in the fixing-bath, so that even the beginner will be able to produce passable diapositives. But they have also their weak points, their defects. They possess very little sensitiveness, and work pretty hard. This may be an advantage, when a diapositive is made from a thin or flat negative, but with strong or even hard negatives the non-sensitiveness of the plate is sometimes very disturbing, and diapositives are obtained which are of very little use for projection purposes. In such cases the ordinary bromide of silver gelatine plates give much better results, and the finest and softest diapositives can be obtained from even very strong negatives. By longer or shorter exposure and a proper developer, any character may be given to the diapositive. To obtain a soft diapositive from a hard or strong negative, expose sufficiently long and use a pretty diluted developer. But if a strong diapositive is to be produced from a flat negative, give a short exposure and apply a concentrated developer, with additional bromide of potassium, if necessary. The most suitable developers are glycin, hydrochinon and pyrocatechin. As the plates will fade during fixing, and darkroom illumination prevents the correct judgment of proper intensity, which is the most important in projection pictures, it is always well to overdevelop the diapositives a little, taking care at the same time that fog is avoided, and then to reduce to normal density in daylight. Red prussiate of potassium is best for reducer, but it must be diluted; 100 cubic centimeters fixing soda 1 : 10, 5 cubic centimeters red prussiate of potash solution 1 : 5, and 100 cubic centimeters of water may also be taken, as a stronger reducer will easily destroy the edges of the picture and removes the fine drawing from the lights. Glass-clear diapositives are thus obtained on ordinary bromide of silver gelatine plates by reducing, which are just as suitable for projection as those upon chlorobromide of silver plates and have the advantage of being much cheaper. Another very agreeable fact is, that diapositives made upon bromide of silver gelatine plates can easily be toned brown, blue or green.

Translated by
HENRY DIETRICH.

GLEANINGS FROM GERMANY.

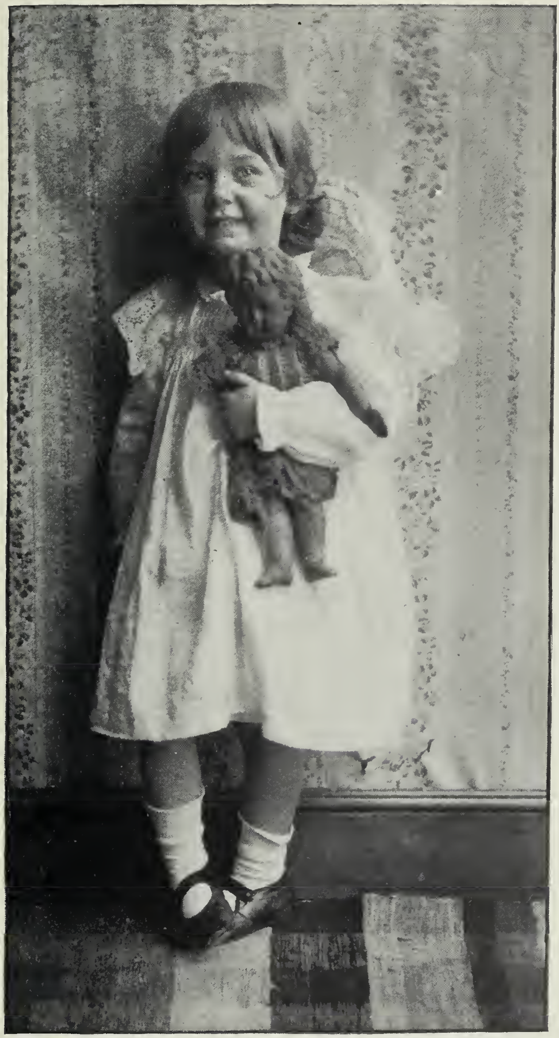
By HENRY DIETRICH.

Penetrating Power of Röntgen Rays upon Oils, Fatty Matter and Colored Gelatine.—The Röntgen rays possess a diversified power of penetration on materials of the same class. On oils, for instance, it is in the following order: Castor oil, oil of almonds, olive oil, poppy oil, Sesam oil, cotton seed oil, of which the first mentioned is the most penetrable. Of the fatty substances we find that butter and lard are least penetrable. The same is the case with the most brilliant colors of colored gelatine. Colors stand in the following order of penetrability:

Methylene blue,
Cyanine,
Methylene violet,
Eosine,
Fuchsin,
Mode brown.
Orange,
Chrysaniline,
Fluorescine.

To blacken diaphragms or central stops, for lenses, the following simple method is recommended: Prepare a sulphate of copper and a carbonate of potassium solution and mix them. A precipitate of carbonate of copper will form. This is collected and washed in water. It is then put into a bottle, and a mixture of 1 part of ammonia to 8 parts of water is added, until the whole precipitate has been dissolved. Now add twice as much water, and suspend the stops in this solution until they have become black.

Action of Bromide of Potassium in Developing Solutions.—The action of bromide of potassium is not always the same in the different developing solutions. While in some developers, like pyrogallic acid, oxalate of iron, glycin, etc., a very small quantity of bromide of potassium, for instance, 1 drop 1:10 to 50 cubic centimeters of developer,



Photographed by CAIRNS, Newark, N. J.

PORTRAIT STUDY.

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exercises a considerable influence, and larger quantities will retard the development considerably, giving hard negatives, other developers will react only upon a larger quantity of bromide of potassium. This is particularly the case with rapid developers containing corrosive alkalies, like rodinal, elkonal, etc. A few drops will hardly produce any effect here, and the bromide of potassium quantity can be increased to several cubic centimeters without fear that the negative will become too hard. Developers with a tri-basic sodium phosphate (or phosphate of soda and the necessary quantity of caustic soda) react, however, upon the addition of smaller quantities of bromide of potassium.

Monochromatic Light Filters.—Dr. Nagel in Freiburg gives a very interesting description how to make monochromatic filters for different physiological purposes, which are undoubtedly of importance for all orthochromatic work, the three-color process, and all color-sensitive dry plates. The several color-filter solutions are produced as follows :

1. *Orange Filter* for the spectrum district between *C* and *D*. Prepare a solution of acetate of copper (verdigris), add a few drops of acetic acid and then drop by drop a concentrated saffranin solution, until the solution will admit no more violet, blue, green and yellow light.

2. *Yellow-Ray Filter.*—Add to a saturated acid solution of acetate of copper, a saturated acidified solution "Orange G." The liquid has a brown appearance and passes only a small stripe of yellow light.

3. *Green-Yellow Filter.*—To a saturated solution of bichromate of potassium acidified with acetic acid add crystals of acetate of copper, and heat the solution. The green liquid passes only monochrome green light.

4. *Green-Ray Filter.*—To a saturated solution of bichromate of potassium, add, in drops, a solution of ammonio carbonate of copper until the red to yellow rays are absorbed. To this solution add a few drops of alkaline fluorescine solution.

5. *Blue-Ray Filter.*—A weak solution of methyl-green is mixed with acetate of copper solution until no red light passes.

6. *Violet-Ray Filter.*—Ammonia oxide of copper solution, concentrated, and mixed with 7 parts of water, gives in combination with a solution of permanganate of potash a spectrum which will admit only the light between *F* and *G*.

7. *Red Filter.*—Dissolve carmine in a solution of carbonate of lithium and mix the solution with picric acid.

Cleaning of Negatives.—To clear moderately fogged negatives, a weakly acting reducer is applied to advantage, and the ordinary acid fixing bath is excellent for this purpose. But the action will be considerably more energetic if the film which has absorbed the solution is exposed to the air for some time, and this is repeated several times. If a still quicker action is desired, a very diluted solution of red prussiate potassium, to which a little fixing soda solution has been added, may be taken. To remove the yellow coloration of the negative, caused by pyro developer, the same may also be treated, after good fixing and washing, with a solution of

Bisulphate of ammonia	1 part,
Water	10 parts,

washing well afterwards. Local coloration by pyro is removed with a stronger solution by application with a brush.

Waterproof Paper.—A French patent gives the following formula: Mix 28 parts ordinary olive oil, 28 parts rape seed oil, 28 parts linseed oil, and add to this mixture a solution of 8 parts of wax in 8 parts of oil of turpentine. One or both sides of the paper are coated with this mixture, and it is asserted, that paper treated in this way is better and more waterproof, than any similar material to be found.

SNOW SUBJECTS, AND HOW TO TAKE THEM.

MR. JOHN A. HODGES, F. R. P. S., in an article in the *Photographic News* of December 8th, on the above seasonable topic, says in part:

" As we are once more approaching the season of the year when Dame Nature is expected to assume her icy mantle of snow and frost, a few suggestions as to the best means of securing successful studies of such subjects may prove of interest to our readers, and particularly to those who have recently addressed inquiries to our correspondence columns upon the subject.

" With regard to the suitability of snow and ice scenes as subjects for pictorial treatment by means of photography there can be no second opinion. A fall of snow, or a heavy hoar frost, will often transform the most ugly and commonplace subject into a veritable fairyland. This applies equally to town or country—indeed, perhaps the town dweller is more benefited than he who lives in the country. It is not necessary under such conditions for the former to wander far afield in search of subjects, for more often than not picture-making material will be found at one's very door. Atmospheric conditions which would ordinarily be accounted adverse, or inimical to the obtainment of good results with the camera, need not deter us from setting out in quest of subjects, for whether mist and fog or brilliant sunshine prevails, equally satisfactory results may be obtained.

" In saying this, however, it is presupposed that the work is only attempted when the precautions hereafter to be detailed have been observed, for to work in the ordinary way in misty or foggy weather would be to court almost certain failure.

" In the first place, the use of color-sensitive plates is absolutely essential, and to attempt to work with any other under the atmospheric conditions just referred to would surely lead to disappointment and non-success. It is well nigh impossible to secure anything even approximating to a truthful rendering of a subject bathed in mist upon an ordinary plate, but with an isochromatic or color-sensitive plate it is a comparatively easy matter. If those who doubt the truth of this assertion will make a few test exposures upon the same subject, and under identical atmospheric conditions, the experiment will prove both convincing and instructive. We do not recommend any particular brand of plate. * * * We should not, however, unless the fog were very thick, almost obliterating objects comparatively near to the camera, use a screen, the yellow color of the fog itself acting in the same way.

"The correct estimation of the exposure would appear to give several of our correspondents trouble, and one gentleman, who gives some of the details of a successful exposure of a landscape taken on a sunny day in summer, asks us to tell him what exposure would be necessary for the same view on a winter's day, the ground being covered with snow. We would say at once that, although with full data it is an easy matter to work out the theoretically correct exposure in such a case, the information would be of little practical value, if, indeed, not absolutely misleading.

" Before any useful advice on the question of the amount of exposure necessary for a particular subject can be given, the exact atmospheric conditions prevailing at the moment of uncapping the lens must be known. The actinic value of sunlight, particularly in winter, is an extremely variable quantity, and the same subject, under identical conditions of working as regards plate and aperture of lens, may require double, treble or quadruple the exposure, according to the strength and quality and character of the sunlight. It is impossible, therefore, to state the exposure necessary unless all the actual conditions are known, and we can only give very general advice upon this point, but advice which, nevertheless, if followed intelligently, should enable the reader to avoid falling into any very serious error of judgment in this respect. In brief, regard must be had (first) to the atmospheric conditions prevailing, and (secondly) to the nature of the subject itself. An open landscape covered with snow, and in sunlight and a clear atmosphere, with no near or dark objects in the foreground, will require but a very brief exposure. As a rough guide, presuming that a lens aperture of *f*/16 and a moderately quick plate are used, one second or even less would in most cases be ample. The same subject, however, taken later in the day in a foggy atmosphere might require double that exposure. Some of the most effective snow subjects are those in which large dark objects in the foreground are brought into strong contrast with heavy masses of snow, or with tenderly outlined forms in the middle distance, gently looming through the fog. With these it is more difficult to accurately estimate the exposure, which is generally much longer than would be supposed. It is with such subjects that the use of isochromatic plates proves so invaluable, and one frequently finds that distant fog-enveloped objects are more clearly visible in the negative than they were to the naked eye.

"Some care is necessary, both in selecting a developer and in conducting development. Personally, we prefer to use pyrogallol to any of the newer reducing agents for work of this class, because we have always found that we could obtain more control over the ultimate character of the negatives than was possible with any other developer.

If the subject is one showing great contrasts—a snow-covered foreground with dark tree trunks, for example—a developer weak in all its constituents should be used, in order that as much detail as possible may be brought out without producing too much density. A pyro developer made up somewhat as follows will do this as safely and effectually as any other.

"Pyro (10 per cent. sol.)	10 minims	= 1 gram.
"Bromide "	10 "	= 1 "
"Ammonia "	10 "	= 1 "
"Water	1 ounce.	

"To succeed with subjects of this nature it is all important that the exposure should have been accurately estimated. The time-honored adage, "Expose for the shadows, the lights will take care of themselves," cannot be followed with advantage when photographing snow scenery—at any rate, in those cases where the most effective rendering of the snow itself is the chief object in view. Therefore, when exposing, the snow must be considered before all else, and no more exposure than is sufficient to properly render the light and shadow falling upon it must be given. The darker portions of the picture, such as bare tree trunks, etc., must be left to take care of themselves, for if sufficient exposure be given to enable full details in those portions to develop out, it must inevitably be at the expense of what is really the motive of the picture. The harmonious and truthful rendering of the snow, which, by the time the shadow detail has all appeared, will be completely buried in a dense, unprintable deposit.

"For the same reason, even when the exposure has been accurately timed and a suitable developer is employed, great care must be taken not to push development too far, or the delicate gradations of light and half-tone which constitutes the chief charm of photographic studies of snow will be lost. It is better to stop development too soon, trusting to intensification to secure the necessary density, than to run the risk of losing the more delicate half-tones by carrying development too far.

"Moisture is very likely to condense upon the surface of the lens when photographing in a damp, cold atmosphere, and it is necessary to wipe it with a clean piece of chamois leather just prior to exposing. We have often traced failures to a neglect of this very simple precaution."

TEACHINGS OF DAGUERREOTYPE.

THAT the professional photographer feels the necessity of an intimate acquaintance with the facts and conditions pertaining to the action of light on sensitized surfaces, is being shown by the reaching out for new media and the rejuvenating and adapting of old processes to the studio work of the present time; and there are few, if any, writers better fitted to treat this subject than Major-General J. Waterhouse, Honorary Secretary of the Royal Photographic Society of England. The BULLETIN, therefore, believes that it will be a mistake not to give to its readers a full report of the Traill Taylor Memorial lecture, delivered in November by General Waterhouse before a large and appreciative audience in London. The lecture covers a wide field of information, and, undoubtedly, represents one of General Waterhouse's greatest efforts in this direction. Space will not permit its publication in a single issue, but it will be continued in the next few numbers until complete. The lecture is reprinted from the *British Journal of Photography*, to which journal we desire to give due credit.—[THE EDITORS.]

THE TRAILL TAYLOR MEMORIAL LECTURE.—NO. II, 1899.

When I had the great honor of being invited by the Committee of the Traill Taylor Memorial to deliver the second of the series of Memorial Lectures, it became a question what subject I could best deal with and would be most appropriate.

Three presented themselves –

1. "The Evolution of the Process Block," which was a subject in which our lamented friend, Mr. Traill Taylor, took himself a deep personal interest.
2. "The Relation of Color to Sensitiveness," which would have dealt with color photography.
3. "Teachings of the Daguerreotype," which is the subject selected by the Committee for the present lecture.

The first lecture, given by Mr. T. R. Dallmeyer, was connected with the optics of photography in relation to the lens, which is the first requirement in the practice of the art with the camera.

The second requirement is the sensitive plate, and I now propose to take you back to the consideration of the earliest sensitive photographic plates in which silver haloid compounds were used.

VALUE OF DAGUERREOTYPE AS A TEACHING PROCESS.

Although Daguerreotype has long been abandoned, it is capable of teaching us a good deal about the action of light on the silver haloid compounds which form the basis of our modern dry plates, as Professor Meldola has pointed in his *Chemistry of Photography*. It may therefore well form the starting point of lectures in the present series, dealing with photographic processes based on salts of silver.

Daguerreotype was for a long time considered a unique and perfectly special process without any intimate connection with the ordinary photographic processes, and, of course, so long as mercury alone was used for the development of the invisible image on the silver plates, it was so to a very great extent. Carey Lea was among the first to show that this view is erroneous, and that the Daguerreotype image is subject to the same laws as govern the wet-collodion and other processes for making negatives. Last year I was able to go further in this direction and show that Daguerreotype plates could be developed in a practical way by the ordinary acid ferrous sulphate and silver, or acid pyrogallol and silver used for wet-collodion plates, as well as with ordinary dry-plate developers, though in this latter case only faint negative images were produced. I also showed that the sensitive surface of iodized or bromo-iodized silver could be rendered more sensitive by treatment with suitable organifiers or halogen absorbents, such as tannin and similar bodies, as in the old dry-collodion processes, and that they could be rendered orthochromatic or color-sensitive by treatment with suitable dyes, like collodion or gelatine plates. The process may therefore be looked upon as an epitome of the photo-plate, and from this point of view is of special value, because it depends upon the employment of haloid salts of silver formed by the direct union of the halogen and the metal, and therefore, in their most simple and purest forms as regards freedom from organic mixtures and complications.

This being the case, we ought to be able to derive a good deal of valuable information from a careful investigation of this process in its various stages and modifications with different halogens or combinations of them, and with different methods of developing and dissolving away the images formed by the action of light. From such an examination I think we ought to be able to obtain fuller knowledge of the probable nature and method of formation of the invisible developable image ; and, even if we do not succeed in this, we may, at any rate, acquire information which may be of use in future investigations. The subject is of considerable difficulty, and one which I feel requires very much fuller special knowledge and more time and attention than I have been able to bestow upon it. In fact, I have only been able to carry out a small part of the programme I sketched out above.

Description of Daguerreotype.

For the benefit of those among you who may not know how Daguerreotypes are produced, it may be briefly stated that a very highly polished surface of silver, either alone or plated on copper, is made sensitive to light by exposure to the fumes of iodine and bromine, with or without an admixture of chlorine. After a suitable exposure in the camera, which, even at its best, is very considerably longer than is necessary with a gelatine plate of ordinary rapidity, the plate is exposed to the warm vapor of mercury, which condenses and attaches itself only to those parts upon which the light has acted, and in proportion to the intensity of the action and the length of exposure, up to a certain limit. In this way an image is obtained in which the lights are formed by a white, powdery amalgam of silver and mercury, while the shadows are formed by the highly polished silver surface, which appears black in contrast with the whiteness of the amalgam when held in a suitable light. This effect is heightened by the process of gilding, which at the same time fixes the powdery image to the plate and makes it less susceptible of injury.

I have here some very beautiful specimens of Daguerreotypes, taken many years ago in the Crystal Palace, by the late Mr. C. Matheson, and presented to the Royal Photographic Society by Messrs. Negretti & Zambra. They will give you a good idea of the results obtainable.

It is not necessary, at any rate for experimental purposes, to use silvered copper plates. Glass silvered by the ordinary silvering processes answers very well for most purposes and is cheap and readily obtainable. It can easily be polished with a little rouge or well-washed Tripoli powder, on a chamois leather pad, but in cases where the surface was rather rough and resisted the rouge, the polishing paste known as "Globe Polish" has given me good results. It is applied with soft cotton or cotton-wool. The objection to it is the greasiness, but this can be removed by polishing off with dry precipitated chalk. Instructive results can also be obtained, even more simply, on silver leaf laid down on glass plates coated with a clear crystal varnish. Specimens of results on all such plates are before you.

The first thing that strikes us in Daguerreotype is that the sensitive surface of the plate is formed by the direct combination of halogens, iodine, bromine or chlorine, generally the first two, and sometimes all three together, with the metallic silver coating of the plate. The question arises, therefore, to which of these elements is the sensitiveness due? To the silver? To the halogens? or specially to the combinations? and how is it brought about?

Sensitiveness of Silver to Light.

I can find very little recorded about the sensitiveness of metallic silver to light beyond the fact Moser found that silver, in common with most other metals, was sensitive to light. He exposed a silver plate for some hours in weak sunlight under a dark cut-out screen which was not in contact with it, and when the plate, which showed no change, had been allowed to cool, it was exposed to the vapor of mercury at about 170 degrees Fahr. A clear image of the screen was produced; those parts where the light had acted had caused the deposition of a quantity of mercury. Plates of dark mirror glass and copper treated in the same manner showed the same result.

The series of phenomena which were dealt with in Moser's researches, especiall those connected with the production of contact images, are, however, so peculiar in their results that it is still difficult to know to what cause they are really due. They have generally been attributed either to some impurity of the surface itself, to vapors given off by it, or to thin films of air or other substances in contact with it or otherwise affecting it. Robert Hunt was of opinion that many of Moser's effects were due to heat or thermic radiations.

In discussing the contact phenomena, the discovery of the sensitiveness of silver to light, as shown by the experiment described, has been overlooked, but I have been able to verify it, and, in addition, to obtain a visible printed-out image on the plain silver plate without any previous preparation—as you will see—also on silvered glass plates. In both cases the light seems to exercise a bleaching action, *i. e.*, the exposed parts appear lighter than the unexposed and attract the vapor of mercury. By other experiments as to the electrical behavior of silver partly exposed to light and partly unexposed, both in the dry state and immersed in water and other liquids, I have found that silver, though not very sensitive, does show undoubted sensitiveness, and it is also shown by the change of color of silver deposited on the cathode plate of a cell through which an electric current has been passed.

Carey Lea found that the three forms of allotropic silver he obtained, viz.: *A*, the red soluble; *B*, the dark brown or blue insoluble variety; and *C*, the golden colored, were acted on by light. *A* and *B* became brown after some hours' exposure, but with *C* the color became lighter. This last result is similar to some of my own observations.

The oxides of silver are all sensitive to light and are decomposed by it. According to Hunt they lose oxygen by exposure, being first converted into a suboxide and then into metallic silver. In presence of organic matter the reduction is more complete.

HYDROGEN PEROXIDE A SENSITIZER FOR SILVER.

I have also obtained some very interesting results with silvered glass plates fumed with peroxide of hydrogen before exposure, and find that it is capable of acting somewhat in the same way as iodine in sensitizing the plate.

Mendeleèff remarks that the nearest approach to the properties of hydrogen peroxide is afforded by a non-metallic element—chlorine; its action on coloring matters, its capacity for oxidizing and for evolving oxygen from many oxides is analogous to that exhibited by hydrogen peroxide. I do not know to what extent this similarity of hydrogen peroxide to chlorine extends to the other halogens, but the fact that there is such a relation, and that we find that hydrogen peroxide can act as a sensitizer to silver seems worth noting for further inquiry. I have here three plates, one sensitized by fuming with peroxide of hydrogen, another with chlorine, and the third with iodine; the results, after exposure to light and development with mercury, are practically the same on all three.

In the case of the Daguerreotype, as in other photographic processes with silver compounds, the sensitiveness of silver itself to light has hitherto not been regarded as in any way an essential factor in producing the results, which are usually attributed to the action of light upon the haloid compounds. It is, however, certainly of interest to know that it is sensitive, and even visibly so, and that images can be produced upon it by the action of light, which may be developed by condensation of mercury vapor, or by the precipitation of molecular silver with an ordinary acid iron and silver developing solution. As a matter of fact, nearly all the photographic phenomena, such as the development of an invisible image, the production of a visible image, reversal by over-exposure, and the effects of pressure in producing a developable image can be shown on the plain silver plate.

A further investigation into the nature of these images would be very interesting, and might show that the part played by the silver is a more important one than is usually assigned to it, and that this is the case seems to be shown by some of the results obtained in printing out on the iodized Daguerreotype plates.

Properties of the Halogens.

We now come to the halogens generally used in combination with silver. Though not very sensitive to light in the pure form, chlorine, iodine, and bromine are so when combined with other substances. They are all marked by their strong affinity for hydrogen, and to this is probably due the ready decomposition of substances containing them when exposed to light in presence of water or organic substances containing hydrogen. Compounds of chlorine are the most readily decomposed in presence of hydrogen, then those of bromine, and lastly those of iodine.

Chlorine may be combined directly with hydrogen under the action of light, but not iodine. Bromine and hydrogen combine under the influence of light at 196 degrees Cent., and form hydrobromic acid. Watery solutions of chlorine and bromine are decomposed by light with formation of the corresponding hydrogen acids. A watery solution of iodine is not decomposed by light, but a solution in alcohol is so to a slight extent. The blue iodide of starch is distinctly sensitive to light. (*To be continued.*)

MR. DALLMEYER'S NEW BOOK ON TELE-PHOTOGRAPHY.

THE following criticisms of Mr. Dallmeyer's new work are reprinted from the *Amateur Photographer* and *Photography*, respectively, and give an admirable idea of the scope of this very important publication. Copies of this book will shortly be in stock in this country, and may be obtained from the publishers of the Bulletin:

In a finely illustrated quarto of 150 pages, just published by Mr. William Heinemann, Mr. Dallmeyer gives all the information which is likely to be required as to the telephotographic lens. Let the enquirer be an amateur, wishing for general information; a professional photographer, interested mainly in studio portraiture; a student, attracted by the mathematical aspect; a military man, whose leading strain is field service, or a photographic bibliographer, whose central idea is systematic record and history, each of these will find his own section of thought and practice fully developed and illustrated. We cannot give a better idea of Mr. Dallmeyer's comprehensive and thorough book than by briefly showing how each of the above classes of reader may lay it down fully satisfied.

The interest of the amateur will begin at the frontispiece, which is M. Boissonnas' photograph of Mont Blanc, taken from Geneva, the distance nearly as great as the reach from London to Brighton, a photograph shown at Pall Mall in 1892, and to which a medal was awarded. The amateur's interest will not stop here, but will run over the whole of the remaining twenty-five plates and the greater part of the text; but we think our ordinary amateur must be excused the chapter on the formation of enlarged images, with its complex mathematical developments. The professional photographer who obtains and studies Mr. Dallmeyer's book may find himself face to face with altogether new and unexpected possibilities. Plate I and Plate II show how remarkable is the difference in the relative size of hands, arms, and other projections when a telephoto lens is used instead of an ordinary portrait lens. We need scarcely say that there is nothing in either of these comparable to the ordinary trick photograph of the projecting foot, as seen in the comic papers, and it is this fact which gives them their value. More striking, still, is the difference between large heads taken direct—Plate IV, taken with an ordinary lens, and Plate V, taken with a telephoto lens, the likeness being surprisingly affected in the former case, owing to the magnification of the nose and mouth. The mathematician is well provided for, in saying which we need do no more than mention Chapters V and VI. The military man, especially, will find much to interest and surprise him. Captain Mario Moris' fort, taken from the car of a balloon, is certainly the most surprising among the illustrations of military application. That this remarkable telephotograph, taken from the car of a balloon, is not of the nature of that isolated and chance success called by billiard-players a "fluke," is sufficiently illustrated by two other photographs taken by Captain Moris under similar conditions, all three being certainly a credit not only to Captain Moris, but also to the Italian Military Balloon Section. In passing on to the bibliographer, we have by no means exhausted the military interest; indeed, we have scarcely entered on it. The bibliography at the end commences with the Barlow lens, and includes mentions of and references to all publications bearing on the development of the telephoto system. Mr. Dallmeyer here and in other places gives the fullest credit to his co-workers, whether English or foreign, a striking contrast with the author of a German work on the telephoto lens, which work we reviewed some time ago, a book in which the name of Dallmeyer is not once mentioned.

We feel even now that we should do Mr. Dallmeyer's book scant justice if we did not mention the final chapter, "Working Data," and say a word calling attention to Plate XXVI, four of Mr. Lodge's natural history studies, obtained with the telephoto lens: (1 and 2), Little Grebe on Nest; (3), Kittiwake on Nest; (4), Rabbit in the Grass.

TELEPHOTOGRAPHY.

A work bearing this title has just been published. We in no way exaggerate when we state that it is beyond question the most important addition to photographic literature which 1899 has seen. Mr. Dallmeyer, its author, is recognized as one of our greatest authorities on all matters connected with photographic optics, while in the particular branch of the subject dealt with in his latest book he is without a rival. Hence the absolute accuracy of the information contained in its pages must go without question, and need not be referred to further by us.

We therefore limit our remarks to such as shall give our readers some idea of its scope, which we may say covers in a most admirable and complete manner that set forth in its full title—"Telephotography, An Elementary Treatise on the Construction and Application of the Telephotographic Lens."

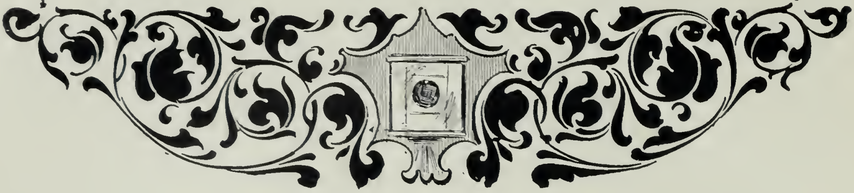
The author commences with a sketch of the properties of light, and the formation of images by a pinhole camera. The perspective drawing of the latter he discusses at some length. This leads naturally to the subject of the formation of images by positive lenses, which is taken up at the point at which most elementary treatises on optics leave off. The formation of images by negative lenses follows, succeeded by a chapter which deals with enlarged images obtained by (*a*) two positive lens systems, and by (*b*) a positive system and a negative system combined, as in the telephotographic lens. A thoroughly practical, and, to a photographer, an extremely interesting, chapter is that which deals with the use and effects of the diaphragm, and the improved perspective rendering given by the telephotographic lens.

If we might draw a distinction between different parts of the volume, as far as their value to the every-day photographer is concerned, it is the chapter to which we have just alluded that might be pointed to as the most useful; inasmuch, as it is by no means limited to the particular form of lens which is the *raison d'être* of the entire treatise. To all those who use telephotographic objectives in any form Chapters 7 and 8 will appeal most strongly. These deal with the practical applications of the lens, both in portraiture, in medical and surgical photography, and for groups and hand camera work, together with full working data for the use of the instrument.

"Telephotography" is a book without which no photographic library can possibly be regarded as complete. It is one dealing with a subject the importance of which to practical photographers is increasing daily, a fact to which our correspondence bears most conclusive testimony. The subject in its complete form has been dealt with by Mr. Dallmeyer, and by him alone. It is to his brilliant ability as an optician, and to his mastery of the technicalities of some of the most abstruse problems in applied science, that we owe the power to employ telephotography in a practical everyday working manner. No further words of ours are necessary, therefore, to describe the magnificent book which the photographic world owes to him.

No steps have been neglected to make the book in printing, in illustration and in every detail of publication worthy of its matter and of its author.

SOCIETIES



THE membership of the New York Society of Amateur Photographers has increased to such an extent that new quarters have been found necessary, and have been secured at 366 Fulton street, Brooklyn. Ladies are eligible to the club and already compose a fair proportion of the membership. More members will be welcomed by the Society, and those desiring to join are requested to write to the Secretary.

* * *

THE Y. M. C. A. Camera Club, of Denver, Colo., was organized on November 10th, with a membership of fifteen. The names of the officers are as follow: Chas. R. Borst, President; C. B. Clayton, Vice-President; I. J. Pink, Secretary-Treasurer. Meetings will be held on the second and fourth Tuesdays of each month.

* * *

THE Indianapolis (Ind.) Camera Club, the first amateur organization established in that city, was formed last November. The following officers were elected: James F. Taylor, President; H. H. Coburn, Vice-President; Harry Benson, Secretary; William Stapelkemper, Treasurer. The headquarters of the Club are at 83 Commercial street.

* * *

THE Essex Camera Club, of Newark, N. J., held its annual meeting on the 28th of last November, and elected the following officers: R. A. Thompson, President; W. H. Broadwell, Vice-President; W. W. Laken, Secretary; J. A. Vanderhoof, Treasurer.

* * *

THE Jersey City Camera Club was organized last month with the following officers: M. McNaughton, President; H. T. Pond, Vice-President; Homer M. Green, Secretary; H. C. Louderbough, Treasurer.

* * *

AT a recent meeting the Y. M. C. A. Camera Club, of Toledo, O., elected the following officers for the ensuing year: Wesley Wuerfel, President; George Harsh, Vice-President; Henry C. Stantz, Secretary and Treasurer.

The Nashville (Tenn.) Camera Club was organized on the 13th of last November. The officers are as follows: W. W. Northern, President; J. H. Thompson, Vice-President; E. W. Jungerman, Secretary; T. B. Scoggins, Treasurer.

◆

The California Camera Club held its annual print exhibition during the last of November. The number of prints was larger and the quality of the work better than at any previous exhibit, showing a decided increase of artistic taste. The Club is also preparing a set of slides for its contribution to the interchange system.

◆

The annual exhibition of the Toronto Camera Club was held in the Forum Building, Toronto, Canada, during the early part of December. The character of the work was of a high class, and showed a marked advance in technical skill and artistic merit. In the open class, Section A, Mr. Oliver Lippincott, of Los Angeles, Cal., carried off the gold medal for his picture, "Moqui Belles," and in enlargements, Section B, the silver medal was awarded to Mr. John Dumont, of Rochester, N. Y., for his picture of "The Weeping Magdalen."

◆

The Portland (Me.) Camera Club gave its first exhibition in November last. The Hanging Committee set a high standard of admission, as was shown by the meritorious character of the work exhibited. The Club has now a membership of about one hundred, and is to be congratulated on the success it has attained in so short a time.

◆

The first annual exhibition of the Grand Rapids (Mich.) Camera Club was held a few weeks ago. The exhibition was largely attended and many beautiful and artistic specimens were shown. Some clever examples of freak photography were displayed, the exhibit of Mr. L. A. Caro in this line attracting particular attention.

◆

The Y. M. C. A. Camera Club of Duluth, Minn., held its first annual exhibition recently. A number of professionals, as well as amateurs, were represented, and many of the exhibits showed a high degree of artistic merit. A large attendance was present and the exhibition was an unqualified success.

◆

The annual exhibition of the Camera Club of Boston, Mass., will be held on the 22d, 23d, 24th and 25th of next month. Ten prints is the limit allowed to exhibitors, and entries will be received up to February 15th. Professor C. F. Norton, Mr. F. H. Day and Mr. J. P. Loud will be the judges on this occasion, and six honorable mentions, for excellence, will be given at their discretion.

E. A. GILT-EDGE FERRO-PRUSSIATE PAPER.

A CUSTOMER in the south in sending an order and remittance for 24 dozen sheets of E. A. Ferro Prussiate Paper, 8 x 10, writes "the last lot, which I have just finished, gave perfect satisfaction. I have never gotten such beautifully clear results with any other paper."

Our Reviewer.
School of Practical Process Engraving.

WILSON'S PHOTOGRAPHIC MOSAICS FOR 1900 has just appeared and is a distinct improvement over the last number, good as that was. This well-known and always popular annual is now in its thirty-seventh year, the present volume being the thirty-sixth in the series.

It contains a valuable summary of the experience of 1899 by the editor, and more than fifty contributed articles by prominent authorities, and is embellished with sixty full-page illustrations in half-tone, and a photo-mechanical print. The illustrations are chosen from the work of the best men in this country, and, of themselves, form a subject of study well worth the price of the entire book. The plates and press work of the present volume are excellent

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THE AMERICAN ANNUAL OF PHOTOGRAPHY AND PHOTOGRAPHIC TIMES ALMANAC FOR 1900 is edited, as in previous years, by Mr. Walter E. Woodbury, and appears in its usually attractive form.

It contains fifty-six contributed articles, which are all valuable and interesting, and which treat of practical questions in a practical manner. The illustrations are numerous and well selected, covering a wide field of work and contributed by some of the best known workers in photography, both in this country and abroad. This volume is, we think, even better than the last in selection of illustrations and practical value to the student in photography.

THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC AND PHOTOGRAPHERS' DAILY COMPANION FOR 1900 is received for review and shows its usual store of valuable tables and formulas, a summary of the year 1899, and an admirable list of inventions patented during the year. This volume makes the thirty-ninth yearly issue, and is fully equal to its predecessors.

DESIGNING AND DRAWING FOR BEGINNERS, by Charles Godfrey Leland, M.A., etc., and *Dyes, Stains, Inks, Lacquers, Varnishes and Polishes*, by Charles Godfrey Leland, M. A., etc., and Thomas Bolas, F. C. S., F. I. C., constitute Parts 1 and 2 of the *Useful Arts and Handicrafts* series, edited by F. Dundas Todd, and published by The Photo Beacon Company. Each part consists of 24 pages of instructions, diagrams, recipes and formulas on the various subjects treated of. These books are published in paper covers at a price of 25 cents each.

THE thirty-first annual issue of the *Public Ledger Almanac* (*Philadelphia*) *for 1900* is at hand, and forms a very useful every-day companion for the busy man. It is full of statistics and information tabulated for easy reference.

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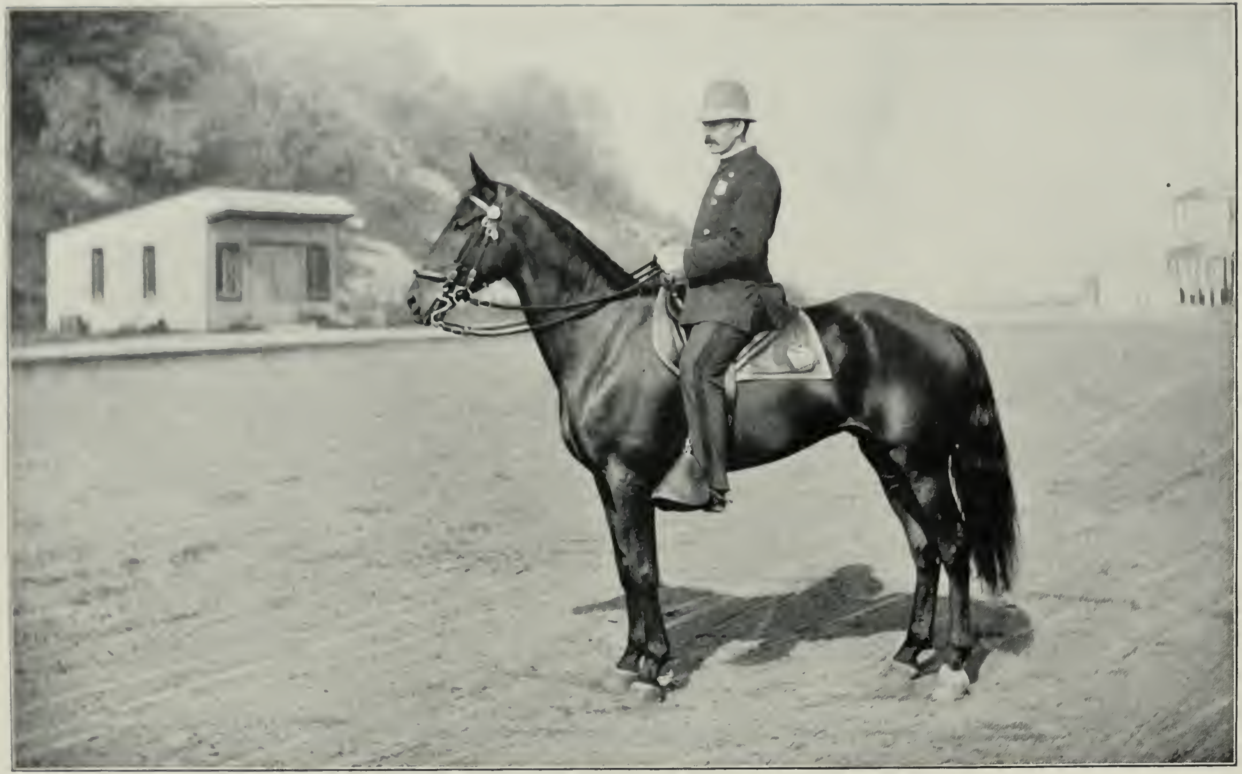

PHOTOGRAPHED BY FRANK W. COLE.

PHOTOGRAPHING HORSES.

See page 41.

ANTHONY'S

Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D.

W. I. SCANDLIN.

Vol. XXXI. FEBRUARY, 1900. No. 2.

THE NEXT NATIONAL CONVENTION.

BY referring to the report of the Executive Committee of the Photographers' Association of America, printed in this issue, it will be seen that two important departures have been made from the custom of recent years, the wisdom of which time will demonstrate. The first is that under which the country has been divided into divisions, each section carrying on a distinct competition of its own in many classes of work. This year, as will be noticed, all divisions have been abolished, and the entire membership of the Association meets in open competition on a field entirely clear of fences. We construe this action of the Executive Committee as an evidence of their belief that the general standard of work has reached a uniformly higher plane of excellence than has heretofore existed, and it seems to indicate that, in the opinion of the Committee at least, the conventions for the past few years have produced such an effect upon the workers of the country as to render unnecessary any qualifications based upon the educational or artistic capabilities of one section as compared with another. While this change strikes us as being somewhat radical, and one which will, perhaps, find many objectors, it is, we think, nevertheless, one which, viewed from the standpoint above indicated, marks a most encouraging condition of affairs, and which should be made to work an increasing good to the Association. As an evidence of growth and development alone it should be welcome to all.

Another new feature is that of the selection of pictures by an Examining Board and the hanging of such only as, in their judgment, are entitled to recognition " as giving direct evidence of individual artistic feeling and execution." The natural tendency, if the lines are drawn at all closely, will be to bring together a much more carefully selected collection of photographs than has ever been shown at a National Convention in this country.

As the quality of the work shown under this method of selection should be better, the quantity will naturally be less than in past conventions, and it is, therefore, the more important that every man who competes should put forth his best effort toward the production of such

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work only as will compel by its inherent value in artistic conception and technical execution the attention and admiration of those who may pass upon its merits. The Photographers' Association of America is this year put upon its mettle as never before, and the result should be the exhibition of such work as has never yet graced its exhibition walls. The best of all previous exhibitions and past experience, whether it be from written or spoken word or from pictured example, should be drawn upon and combined with the best art instinct of each exhibitor in the preparation of his exhibit, and the present time is none too soon to begin serious work in this direction. If all take hold with a will to support the Committee and each one does his own share loyally, we believe it will work well, and certainly no one will do otherwise.

OBITUARY.

We announce with deep regret the death of Mr. David Hutcheon Hogg, of Montreal, Canada, who met with a serious accident on the steamship while *en route* to Europe on a business trip. Mr. Hogg was taken to the South Kensington Nursing Home, in London, where he died on December 22, 1899. The sympathy of a wide circle of friends goes out to Mrs. Hogg in her bereavement.

* * *

Mr. Benjamin French, of Boston, Mass., who has been well known in photographic circles for a long number of years, died at his home on January 2d, after having been in declining health for about four months.

Mr. French was born in Enfield, N. H., in 1819, and has been in the photographic business, either in daguerreotypy or in photographic supplies, since the early 40's.

He is survived by a widow and son.

* * *

Mr. Sam C. Partridge, of San Francisco, died at his home in that city on the 8th of January, after a short attack of typhoid fever. Mr. Partridge, though only thirty-five years of age, had established for himself an enviable name in photography and was widely known in the profession. He was a brother of Mr. William H. Partridge, of Boston, to whom and to his sorrowing widow and family the sympathy of the fraternity will be extended.

* * *

Mr. Edwin S. Sterry, for many years one of the most prominent photographers of this country, died at his home in Cohoes, N. Y., on January 14th, at the age of fifty-seven years, as the result of a stroke of paralysis from which he had suffered since April, 1898. Mr. Sterry's sitters included many of the most notable people of the United States. He was for many years in the well-known firm of McDonald & Sterry, and in later life by himself. He leaves a widow and two sons. He was a genial and whole-souled man, whose death will be keenly felt among those with whom he lived.

* * *

Dr. Carl Schleussner, one of Germany's most prominent theoretical and practical workers in the different branches of photography since its early days, died on the 15th of December, 1899, at Frankfort-on-the-Main, at the age of seventy years. He had a large laboratory for the manufacture of chemicals, particularly collodion and nitrate of silver, but he was more extensively known by his dry plates, which enjoy a high reputation in Germany. For many years he was President of the "Verein zur Pflege der Photographie" at Frankfort.

Items of Interest

PRESIDENT C. R. REEVES, of the Indiana Association of Photographers, writes in a very hearty strain regarding their coming Convention, full particulars of which may be had by addressing W. O. Niceley, Secretary, Bloomington, Ind. The prize list is a large one, and covers all fields of photography. Mr. Reeves says: "We anticipate a strong convention. Have always had them, but we expect this one more so." Success to Indiana.

* * *

The Art Institute of Chicago announces that under joint management, it and the Chicago Society of Amateur Photographers will hold a photographic salon in the galleries of the Art Institute from April 3d to 18th. No prizes are offered and no charge will be made for exhibiting. The jury of selection will be composed of Mr. Alfred Stieglitz, Mr. Joseph T. Keiley, Mr. Clarence H. White, Miss Eva L. Watson and Mr. Ralph Clarkson. Entry blanks and full particulars may be had by addressing Frederick K. Lawrence, 65 State street, Chicago.

* * *

An amateur photographic contest is announced to be held by the Wilkes-Barre Wheelmen, open to all amateur photographers without restriction as to subject, size or number of prints, March 29th, 30th and 31st. All entries must be made before March 3d. Full particulars are obtainable by addressing R. S. Kaufman, Secretary Amateur Photographers' Contest, 106 South Main street, Wilkes-Barre, Pa.

* * *

A very interesting series of experiments have lately been carried on by the United States Fish Commission in the photographing of fishes under natural conditions. These experiments have been made under the direct supervision of Dr. R. W. Shufeldt, who caused to be constructed for the purpose a special tank arranged with special facilities for light, with the result that a series of photographs of a remarkable character have been obtained. The difficulties attendant upon work of this kind are tremendous, and Dr. Shufeldt is to be congratulated upon the progress he has made and the success that has attended his efforts.

* * *

A recent copyright decision handed down by Judge Hallett in the United States Circuit Court, at Denver, Colo., declares that a photograph of natural scenery cannot be copyrighted, and opens a question which cannot but be of great importance to photographers of this country. Judge Hallett in his decision is reported as saying: "A photograph of natural scenery is not the subject of copyright, because it is not an original conception of the artist. It is merely a skillful manipulation of the camera. Further, it is not shown there was any originality about the coloring of the photograph in question, and it was shown by the defence that the result achieved was old and in common practice."

This decision, and others which are constantly being referred to in the daily press, indicate the urgent necessity for some national action on the question of copyright as it affects the various branches of reproduction, and it is to be hoped that some tangible progress may be made in the matter at the forthcoming convention in July.

* * *

The report of Director James F. Keeler, of the Lick Observatory, for the year 1899, just printed, shows that photography has been a very active agent in the work of the observatory during the past year, and seems to indicate that its work in the future will lie more in the direction of verifying measurements and movements of the stars and planets than in discovering new bodies. Photography, in connection with astronomy, has now taken such a position as to enable the operator to bring his work down to a very close scientific basis of calculation, and tends more each year towards closer exactness and accuracy.

* * *

The Harvard Observatory's exhibit at the Paris exposition, showing particularly the application of photography to astronomical work, will occupy a very important position in the exhibit of the United States, and it is understood that it has already been packed and is in transit. The exhibit when in position will occupy a wall space of 13 by 18 feet, projecting about 3 feet from the wall itself, and will illustrate in a very complete manner the progress of the science from its beginning, as shown in the first astronomical photograph taken at Harvard in 1858 and up to the present time. These photographs will be mounted in wing frame cabinets, which will allow of a very large number being shown in an extremely small space, and, from the description, the exhibit bids fair to be one of the most notable, from a scientific and educational standpoint, from this country.

* * *

Experiments are now being conducted at the observatory of Harvard College for the observation of the total eclipse of the sun, which will occur on May 28th. This eclipse will be visible in Georgia, where a temporary station has been secured, and photographs will be taken under the direction of Professor W. H. Pickering. It is hoped by those interested that a new planet may be discovered during the time of the eclipse, which will amount to one minute and a half.

* * *

For the permanent pasting of labels on tin, it is advised to moisten the gum with pure diluted hydrochloric acid in the proportion of equal parts acid and water, and, after attaching, to allow them to remain exposed to the air for forty-eight hours, so that the excess of acid not combined with the tin may evaporate.

Labels may be attached to varnished surfaces by using hot glue, to which has been added about one quarter of its bulk of turpentine.

GLEANINGS FROM GERMANY.

By Henry Dietrich.

Photographing on Marble.—The possibility of producing a photographic picture on white marble depends upon the porosity of the material. Such pictures are produced in the following way: The unpolished marble is provided with a coating of

Benzine	500 parts.
Turpentine	500 "
Asphaltum	50 "
Beeswax	5 "

When dry, it is exposed under a negative for about twenty to thirty minutes in direct sunlight and the picture is developed with turpentine and washed with water. The high lights are coated with an alcoholic shellac solution and the plate is then laid into a strong aqueous color-matter solution. When colored sufficiently, the plate is taken from the solution and is polished. If the picture does not cover the whole plate, the edges should be provided with a shellac solution before putting the plate into the color solution.

To obtain enlargements upon linen in the ordinary photographic tone, the following process is very suitable. The linen is washed well in hot water, all folds are pressed out without the flat-iron coming in direct contact with the linen, and it is then put into the following bath:

Bromide of potassium	3 grams.
Iodide of potassium	1 gram.
Bromide of cadmium	1 "
Water	240 cubic centimeters.

After five minutes the linen is taken out and dried. To sensitize it, put it into the following bath:

Nitrate of silver	4 grams.
Citric acid	1 gram.
Water	140 cubic centimeters.

Leave it in this solution for five minutes and then dry in the dark. Expose until a faint outline of the picture is visible, whereupon the following developer is applied:

Pyro	5 grams.
Citric acid	22 "
Water	220 cubic centimeters.

The temperature of the developer should be 30 degrees C. The developed picture is well washed and toned in the following gold bath:

Ammonium sulphocyanide	25 grams.
Chloride of gold	1 gram.
Water	1 liter.

The fixing is done in a fixing soda solution in fifteen minutes' time.

Improving Hard Negatives.—Under-exposed plates give generally negatives which are too dense in the lights and too thin in the shadows. They can be improved in the following manner: The washed and dried negative (not treated with alum) is put in a weak solution of a blue-green color, soluble in water, and is left therein for some time. The film absorbs the color—more where there is less silver in the gelatine film than on places where the silver would retard an absorption. In consequence of this the shadows will not be so easily penetrable by light, while the lights have hardly experienced any change or increase of their density, and the result is, therefore, a much better proportion between light and shadow, and better prints.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

MEETING of the Executive Committee of the Photographers' Association of America, held at Milwaukee, Wis., January 8, 1900.

President Stein in the chair. All members of the Executive Board present.

The reports of the Secretary and Treasurer were read, showing a balance of cash on hand of $1,201.43. The President appointed J. George Nussbaumer and George M. Edmondson an auditing committee on the Secretary and Treasurer's accounts. Committee reported them correct. Treasurer Frank W. Barrows presented his bond and was accepted.

It was moved and seconded that the next Convention be held at Milwaukee Industrial Exposition Building, July 23–27, inclusive.

Next order of business, preparation of prize list.

It was moved and seconded that the divisions be abolished. Carried.

The following was unanimously adopted.

The purpose of this exhibition is to show only such pictures produced by photography as may give distinct evidence of individual artistic feeling and execution.

From the pictures submitted for exhibition, a selection will be made by an examining board, and such pictures will be hung as, in the opinion of the board, are within the scope of the exhibition as expressed above. Each exhibitor will be furnished with a certificate of acceptance of his work. No pictures, whether accepted or not, can be removed before the close of the exhibition.

CLASSES.

Grand Portrait Class.—Six pictures, 16 inches or larger. First award, selected; second award, a gold medal; third award, a silver medal; fourth award, a bronze medal; fifth award, diploma.

Genre Class.—Three pictures, 16 inches or larger. Subject to be chosen by the photographer, the title to be appropriately inscribed on the picture. First award, selected; second award, gold medal; third award, silver medal; fourth award, bronze medal; fifth award, diploma.

Miniature Class.—Eighteen pictures. The largest dimension not to exceed 4 inches, all to be grouped in one frame. First award, gold medal; second award, silver medal; third award, bronze medal; fourth award, diploma.

Class A.—Twelve pictures, 13 inches or larger. First award, gold medal; second award, silver medal; third award, bronze medal; fourth award, diploma.

Class B.—Twelve pictures, the largest dimension to be 9 inches. First award, silver medal; second award, bronze medal; third award, diploma.

Class C.—Twelve pictures, the largest dimension to be 6 inches, all to be framed in one frame. First award, silver medal; second award, bronze medal; third award, diploma.

Landscape Class.—Nine pictures, any dimension. First award, silver medal; second award, bronze medal; third award, diploma.

Marine Class.—Nine pictures, any dimension. First award, silver medal; second award, bronze medal; third award, diploma.

Foreign Class.—Best collection of photographs of any size, framed or unframed, to be delivered to the Association free of charge. First award, silver medal; second award, bronze medal; third award, diploma.

RULES AND REGULATIONS.

1. No exhibitor can enter more than two classes.

2. All competitors must be members of the Association, except the foreign class.

3. When one dimension of picture is given, it applies to the entire length or breadth of the picture in all cases. This rule applies to the size of the print, not the mount.

4. All exhibits must be framed.

5. The Association will not be responsible for any loss or damage to pictures in its charge, but will use all reasonable care to prevent such occurrences.

6. Applications for space in the art department will positively close July 7th. Applications for space in this department must be made to George B. Sperry, First Vice-President, No. 319 Summit Street, Toledo, O.

7. All pictures submitted for exhibition must be addressed to George B. Sperry, First Vice-President, Milwaukee Industrial Exposition Building, Milwaukee, Wis. Forwarded at owner's risk; charges prepaid and delivered not later than July 14th. Pictures from abroad come under the same rule.

8. Exhibits for the manufacturers and dealers' department to be shipped to J. George Nussbaumer, Secretary Photographers' Association of America, Milwaukee Industrial Exposition Building, Milwaukee, Wis. Charges prepaid and must be placed in position by July 21st.

9. Have your box covers screwed instead of nailed. Your home address must be marked on the underside of cover for return of packages. The Association will not be responsible for packages not so marked. Put screw eyes and picture wire for hanging in the box.

10. All boxes and packages will be accepted at any time previous to July 14th, so that photographers need not feel any uncertainty about the safety of their goods. No exhibits will be allowed to be removed from the hall until the close of the Convention.

11. No manufacturer, dealer, or their representative, shall do business on the floor of the hall unless he or they rent floor space or desk room.

12. All exhibits will be entered under a number given them by the Vice-President, and shall not contain any name or markings that shall reveal the identity of the exhibitor. Exhibitor's name will be attached after awards are announced.

13. All entries for competition must be prints from negatives made since the last Convention.

Moved and seconded that the prize list and rules and regulations be adopted as above. Carried.

Moved and seconded that the Secretary be instructed to write to Mr. C. M. Hayes, accepting his kind offer to send for exhibition foreign exhibits, representing typical up-to-date photography of people, habitations and interesting sections of the country from all nations of the world, extending to him the thanks of the Executive Board. Carried.

Moved and seconded we appoint an honorary Vice-President in each State to represent the Association in their State. Carried.

The following committees were appointed:

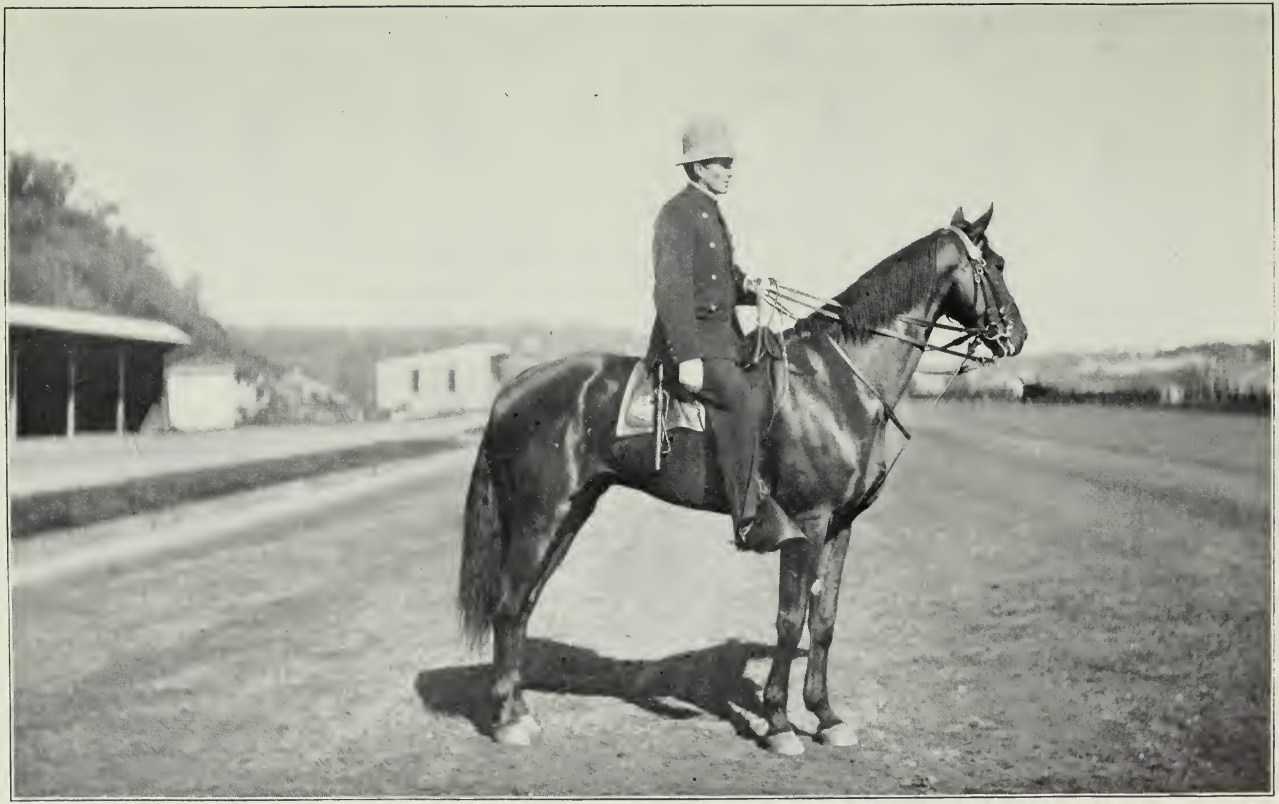
Medals and Buttons—EDMONDSON AND SPERRY.
Transportation—NUSSBAUMER AND SPERRY.
Hotels—STEIN.
Exhibits and Decoration—EDMONDSON AND SPERRY.
Printing—NUSSBAUMER AND STEIN.
Programme—NUSSBAUMER AND STEIN.
Amusement—STEIN AND MILWAUKEE RESIDENT.

Moved and seconded that the Secretary be instructed to write to E. C. Eldridge, Curator of the Layton Art Gallery, accepting the kind invitation of the President and Trustees to visit the Art Gallery during the Convention ; also conveying the thanks of the Executive Committee. Carried.

A communication was received from the Photographers' Association of Wisconsin, stating that, owing to the Photographers' Association of America accepting the invitation of the Photographers' Association of Wisconsin to hold their Twentieth Annual Convention at Milwaukee, the Photographers' Association of Wisconsin will hold no Convention in 1900, but will join heartily with the Photographers' Association of America in making the Convention of 1900 the largest and most successful Convention known in the history of photography.

There being no further business, the meeting adjourned, subject to the call of the President.

J. GEORGE NUSSBAUMER, *Secretary.*



Photographed by FRANK W. COLE.

PHOTOGRAPHING HORSES.

Posed to show long neck and small head.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

PHOTOGRAPHING HORSES.

By Frank W. Cole.

Illustrations by the author.

THE destiny of man in his future avocation has been determined in many ways in the past and probably will be for centuries to come. When I took up photography as a pastime it was more to please a mutual friend who had invented a camera, from which he had expected to reap a fortune, than to master its secrets. It was a simple affair of universal focus, making a negative 2½ by 2½ inches. Being about to take a pleasure trip to that beautiful summer resort, the Thousand Islands, on the St. Lawrence River, I was presented with one of his cameras, and, putting up a good supply of plates, fully expected to return from my two weeks' trip with all the views of this picturesque spot in my possession. On my trip down by boat to this resort I managed to press the button several times on subjects that looked very inviting, and for the next two weeks was kept busy photographing my friends and the interesting spots that came under my observation, among these being a view of a sailing yacht.

Field of pacing horses, nearly front view.

Ten thousand dollar Stake Race, Detroit, 1899.

On my return home my new toy had captivated me to such an extent that I could hardly wait until my negatives had been developed, and, having promised innumerable prints from the collection to my friends, I was anxious to show them that taking photographs was a simple matter, depending wholly on one's ability to simply press the button. Within a day or so I was shown the results of my first attempt as an amateur photographer, and must say that I felt as though I had been the butt of a practical joker. Fortunately, however, I had secured one good negative, that being of the yacht, which proved to be one of the best negatives ever taken by this one particular camera. At first I knew not whether to feel pleased or displeased, but this one good negative saved the day, and added one more patron to the ranks of amateur photographers.

I was given to understand by my professional friend that my next venture would prove more satisfactory, and this led to another trial. Being a great lover of the horse, especially the trotter, I attended a trotting meeting at a nearby town. Having left the filling of my plate-holders to the care of my friend, I again started out, feeling that my first lesson in photography was all for the best and that my second venture would prove my worth in this new field of photographic science. I had been given to understand that this one particular camera was simply "chain lightning" in securing moving objects. At the racetrack I devoted my entire attention and the day to making exposures of head and head finishes in these most exciting races, and, if my memory serves me correctly, I booked orders for several dozen prints, and my future looked as rosy as the gold fields of Alaska. Once more I invaded the laboratory of my friend, with the feeling that this time I would show him negatives that were the acme of perfection, but, alas! how soon were my hopes to be blasted and my ambition for glory to fall as the meteors fall from the heavens! Upon opening my plate-holders there was not one plate in them, my friend having forgotten to fill them. This blow fairly shattered my ambition for

John R. Gentry. Record, 2.00½.

the time, as I became the subject of the joker for weeks to come, and even unto this day am occasionally confronted with my error.

As I now look back upon these periods of non-success I am led to believe that it was these same jests and failures that led me on and on in my search for knowledge in the photographic world. After this second attempt I made up my mind to carry on experiments in secrecy for the future. I purchased books upon photography, and by close application and careful study of working directions soon found that in these books I had a friend that would not mislead me or laugh at my errors. My experiments proved fairly successful after this, and it was not long before I discovered that if I was to continue in my undertakings a better camera must be had, which resulted in the purchase of a 4 x 5 box, from which time forward my advancement was more rapid, and I began to secure very fair negatives. My next step was to purchase a 5 x 7 camera, and, after experimenting with lenses and rapid shutters, I began to get results that were nearer my idea of what they should be. I finally selected the horse as the one branch of photography to which I determined to confine myself and thenceforth carefully studied the posing of horses, lights and shadows, reflecting rays and dozens of other details, until my horse friends told me I was becoming quite an expert in this branch ; but horses are not human beings, a fact which finds frequent demonstration, and when one wants them to look pleasant that is likely to be the very time that a pesky fly is doing good solid work on some part of their anatomy. Then, again, the racehorse of to-day is so highly bred that he is of the most sensitive disposition and so nervous and restless that the only way to secure a good photograph of him when not in motion would be to place him in a plaster cast. This treatment, however, being unhandy and out of the question, the only way I find out of my dilemma is to make the best of it and get my exposure when I think he is standing somewhere near right, but even then the task is not an easy one, as any photographer who has ever attempted this one branch of the art will

acknowledge, for watching the eye, ear, limbs and body, besides keeping your camera in focus from the shifting of the animal, requires more eyes than are allotted to one man.

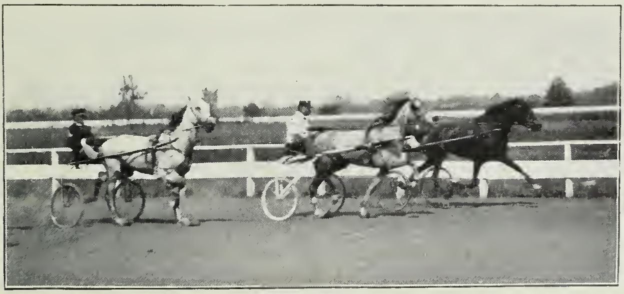
To make a first-class photograph of the horse, the artist must be a lover of this noble animal; he must study his beauty and defects and judge from his conformation how he should be posed. The next point is to have him look natural, just as he appears from day to day to the eye of his owner. After having satisfied yourself on these points, the next thing is to secure a negative of him as you see him true to life, and this is one of the most difficult feats of the art. I have frequently exposed a dozen plates on my subject only to find that they were all faulty in some one respect. An owner naturally thinks that his horse is the only horse, as the attachment that forms between this dumb animal and his master makes him an ideal in his eye, and the artist must use the same judgment that our great portrait artists pursue in presenting the best side of the subject to the public. Some horses are higher behind than in front, or *vice versa*, and the artist must overcome this defect. Again, a horse may have crooked hind legs or bowed front ones, and these defects you must right or the owner will never accept your work. A Roman nose is quite frequent among horses, and some have very large heads, out of proportion to their bodies. These are only a few of the defects of the horse, and, by the use of distortion, they can all be remedied by the photographer. Lights and shadows play a prominent part in this work—a very strong high light, for instance, showing sunken shoulders or hips, which, to the critical eye of a horseman, denotes unsoundness, and this must be avoided.

For rapidly moving objects, my experiments demonstrated to me that I had not yet secured the right lens, shutter or plate, and that I needed all of these accessories to accomplish what I had set out for. It was not long, therefore, before I added one more new outfit to my collection of cameras, and now, after having experimented with nearly every lens and shutter upon the market, I have still not reached the zenith of my ambition and probably never shall.

For the past five years I have provided myself with modern equipments and materials, starting out early in the summer with the idea that I would reach the pinnacle of my ambition in this one branch of art, only to return in the fall after having visited all of the prominent cities where racing is held in this country, feeling that, while I had made progress, I was still nowhere near the top of the ladder in securing horses in motion. From the results of my experiments, I find that where a horse is photographed full side view, when he is moving at the rate of a mile in two minutes, the image appearing on the plate about 1 inch in height, there is invariably discernible a foot movement while the body of the horse is practically still. This is caused by a defective shutter, and I do not know of a shutter made that acts quickly enough to overcome foot motion. I was once told by a scientist, whose knowledge of moving objects had been a life-long study, that the movement of a horse's foot, when traveling at this high rate of speed, was equal to the speed of a cannon ball traveling at the rate of 1,800 feet per second; but, of course, I do not verify this statement. In all of my later-day observations I find that we have both lenses and plates fast enough for this work, as, when exposures are made at these fast-moving objects, the objects at rest are clearly defined, while there is invariably noticeable movement in the foot.

What is now needed is a shutter fast enough to overcome this one defect, and while there are several good shutters in the market for ordinary work, not one comes up to the desired standard for this one branch of photography.

In conclusion, I would say that, while there are many failures in the art of horse photography, the few good results stimulate the artist to other trials and make him appreciate his successful productions the more highly.



Trotting horses, nearly full side view.

* * *

All copy for March issue must be in our hands not later than February 15th.

A NEW FORM OF OXY-MAGNESIUM LAMP FOR PORTRAITURE.

By F. C. Lambert.

THE form of apparatus to be here described was, we believe, the inventive outcome of Mr. Smith, of the Platinotype Company. It was described and its performances fully demonstrated by Mr. E. J. Humphery, at the London Camera Club, December 11th.

It may be said at the outset that this lamp possesses several new features. It enables the amateur to take home-portraits in the evening, or the professional to supplement or dispense with daylight in his studio. It is simple, safe and cheap. No smoke, no smell, no danger; portable, and renders one independent of gas or electric supply companies. These are obviously noteworthy points.

The apparatus is based on the fact—supported by Captain Abney's dictum—that magnesium burnt in oxygen has ten times the actinic value that it has when burnt in air. And now to describe how this is done:

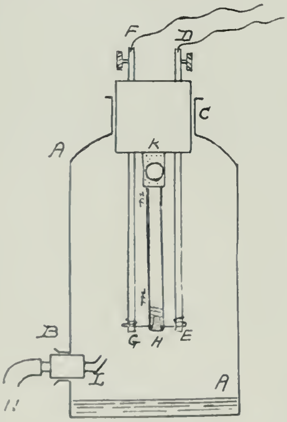


Fig 1.

Figure 1.—*A A* is a white glass bottle of shape as shown. Its fluid capacity may be 40 or more ounces. It has two necks or openings—one at *C* in the usual position, another "tubuline" or neck-like opening at *B* near the bottom. This latter opening *B* is filled with a rubber stopper. This in turn is pierced, and permits a short tube *L* to pass through it. The inner end of the tube is free. The outer end is connected with a rubber tube *N*, which in turn is connected with the gas supply or oxygen gasometer. Next, as to the other neck *C*. This, again, has a rubber stopper or bung Through this are passed two straight stout brass wires or thin rods *D E* and *F G*. Their external ends *D* and *F* are fitted with clamping screws, which enable us to connect *D* and *E* with the two wires from a small electric battery or accumulator. The other ends of these brass rods, viz., *E* and *G*, are connected by twisting round them a short bit of zinc platenoid (not platinum) wire. Platinoid seems to be an alloy of variable nature, but somewhat resembling German silver, and having a high electric resistance. Finally, we have a simple contrivance for holding the magnesium ribbon. This is done by means of gripping one end between two thin pieces of brass, which are clamped together by a small screw. This clamping arrangement shown at *K* has one end inserted into the rubber bung midway between the two brass rods. To explain how the apparatus works, we will for the moment assume that we have already filled the bottle *A A* with oxygen gas by means of the tube connection *N L* from the gas holder. We now take a piece of paper, soak it in a saturated solution of potassium nitrate (saltpetre), and dry it. This forms a fusing or torch paper. Next, a small bit of this prepared paper is wrapped round one end of

a bit of magnesium ribbon of proper length (say 5 to 6 inches). This end so covered is now bent up into the form of a flat hook. This hook *H* we hitch across the little bridge of platenoid wire *E G*, and the other end of the metal ribbon we insert between the flat pieces of brass at *K*, and screw it tight enough just to hold steady. This holds the magnesium as shown in the figure. Several of these holders are prepared beforehand, so that when one is used it can be removed from the bottle, and its place quickly taken by another, and so on.

By means of a connector switch or press button, we close the electric circuit. The current enters one rod at *D;* passes down to *E;* then across the fine wire bridge *E G*, and so up to *F*. But the passage of the current through *E G* heats it, and finally causes it to grow red hot. This now ignites the torch paper round the magnesium at *H*. This, in turn, sets the ribbon burning, which goes on steadily until all is burnt. All this, in actuality, takes less time than is occupied by writing or reading the words telling what takes place. There is no sudden flash. But as soon as the circuit is closed, a light begins to glow and steadily increase until the ribbon burns and the flame quietly dies out. A bit of ribbon, about 5 inches long, was observed by the present writer to take about four seconds burning. Each ignition fuses the platenoid wire. Thus, a shallow layer of water is left in the bottom of the bottle. After one exposure, the spent holder is disconnected from the battery wires at *F* and *D*, a newly charged holder inserted, and the battery wires reclamped, and we are again ready for a second exposure. Oxygen being rather heavier than air, there is practically no loss of oxygen from the bottle during the changing of holders.

The supply of oxygen to take the place of that used each time is automatic. To see how this is done, let us turn to the next diagram.

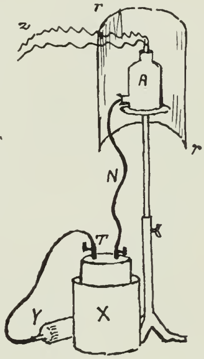


Fig. 2

Figure 2.—Here we see the ignition bottle *A* supported on a stand, which, by means of sliding rod and tube, enables us to adjust it to any height required. From the tubulure we again see *N*, the rubber tube, running down to a small gasometer or gas-holder.

Now, this gas-holder may be charged in any way we please. We can get supply from a bottle of compressed oxygen as at *Y*. This supply is connected by means of a second rubber tube to another tap in the gas-holder. Starting with the gas-holder empty, we open *T* to supply tap, then gently turn on the gas from the gas bottle. The gas holder rises as gas enters. When full, we turn off first the bottle tap and then the holder tap. The bottle may now be disconnected. The gas-holder next being connected with the ignition bottle, this has to be filled. This we may do by displacement. The bottle is filled with water in a bucket and put neck downwards. Supply of oxygen is now turned gently on, and gas entering *N L* is allowed to displace all the water but 2 or 3 ounces; *i. e.*, just enough to cover the bottom. The bottle mouth is now closed temporarily with a waxed cork, the outside wiped, and then the ribbon holder put in position. Of course, when the ribbon is burning, considerable heat is momentarily generated. This tends to expand the gas, and forces some of it back again into the holder. But as soon as the burning is over, the bottle and contents again quickly cool, and more oxygen now rises from the holder to refill the bottle *A*. Fixed to the stand (but adjustable) is a semicylindrical reflector *r r*, whitened inside. We are now prepared to test the apparatus. This we can do in any ordinary room. We only further need now a background of some kind—a whitened wall and a reflector—or two reflectors.

Figure 3.—Here we have the relative positions as shown in ground plan. At *S* we see the sitter's chair, at *L* the camera and lens provided with a pneumatic shutter for exposure. *V W* is the wall of the room, against which is hung a large white sheet, or it may be covered (temporarily) with sheets of white paper, or this may, in the studio be a movable reflector. At *M* is seen the semicircular reflector of our lamp or bottle. It is so placed as to throw no direct light on to the sitter, but on to the wall at *A* and *B*. (In fact, neither the sitter nor the operator should be dazzled by any direct light from the lamp at all.) Thus light from the lamp goes—as shown by the dotted line—from *M* to *B* and is reflected towards the sitter along *B S*. Other light falls in the direction *M A*, is reflected along *A R*, and again reflected—by *R*, the small reflector, towards the sitter—along *R S*. This double reflected light of the shadow side of the sitter's face is shown by the broken line. Focusing, posing, etc., being done by means of gas light, the operator stands at *O*, between the camera and the lamp. In his left hand is the electric push button, and in his right the pneumatic bulb of the lens shutter. Pressing his left hand, a steadily increasing glow is set up, as the magnesium begins to burn. When this is steadily burning he opens the lens shutter with the right hand, and all is over for the present. Then here is a new point—the lamp and lens shutter are now both manipulated by one person, instead of as heretofore having one person to burn the magnesium and another to make the exposure. Last, but not least, comes the question of cost. It is estimated that 1 foot of gas will suffice for 300 to 400 exposures. Each exposure also consumes only about 5 inches of magnesium ribbon, and with the metal at 1 shilling and 6 pence per ounce, which means perhaps a hundred such strips, this is not a serious item. Then the tiny bit of platinoid wire needs renewal every time, but as this is only light wire about as thick as a small needle, and, as this metal wire is sold at 2 or 3 shillings per pound, that is not a serious item. Thus the materials used would not total up to more than a small fraction of a penny.

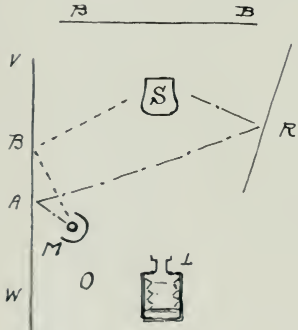


Fig 3

As to the electricity. This may be a small battery of three or four cells of any convenient type, or, what is still more handy, a small accumulator. The one used for the demonstration on the occasion referred to was only about the size of a quite small hand camera.

It was pointed out that this light was of especial value for work in hospital wards, where the patient could be photographed without being moved.

Other uses will suggest themselves to our readers, as, for example, that of copying paintings on walls from which they cannot be moved, objects in museums, etc., etc ; architectural details in dark corners. It should be observed in this connection that this form of lamp meets the objection often properly made by authorities in charge of public buildings, viz., the after-effects of combustion, as smoke, powder of magnesium oxide. By the above means of combustion products are confined within the bottle.

FASHION OR ART?

By Henry Dietrich.

FASHION is a high-sounding word, and one that has always found many followers. It is creeping, not only among the shelves and behind the counters of the big drygoods establishments or the elegant tailor shops, patronized by the men of society, but we see its dominating influence in all stages of life, in our houses and on the street. The present methods of science are even influenced by it. We find it in music, painting, sculpture and—in photography. Fashionable pictures !

That new inventions and improvements in our progressive art, as they appear from time to time, will naturally effect occasional changes in the style of pictures, is evident, and any improvement in that line is certainly hailed with pleasure and satisfaction by the public.

But this is not the point we are aiming at. The question is: " What is a fashionable picture ?" Who makes the fashion, the public or the artist ? Is the artist prompted by a desire to gain fame and notoriety by launching a picture, embodying new ideas, into the market, or is he infatuated merely by the hope of financial gain, impelled by irresistible love of money ?

This point deserves our consideration. Let us look back a few decades. The old-style Carte de Visite, mostly in use at that time, was abandoned for the cabinet picture; the album, once a favorite in every family and in every parlor, has almost disappeared, and larger sizes of pictures now adorn our easels, our mantels and side-tables. Very good, so far as the change of size is concerned, but has sufficient attention been paid to developing the artistic improvement of the picture ? With some highly praiseworthy exceptions, I believe not The technical part, as a rule, is executed with greatest care, and leaves nothing to be desired. Fine mounting boards, in all possible designs and colors; perfection of finish, so far as surface of the print is concerned, retouched to the point of wiping out the last wrinkle and character mark in the face, that is what in many quarters constitute the fashionable picture of to-day. But the picture, the portrait itself? Why is it not enough to make a facsimile of the original, says the artist. Instead of being cultivated, the taste of the public is being led astray by the external decorations of the picture, and, ignorant of the truth of art, it blindly worships at the shrine of fashion. It is said that in the old ambrotype times, a lady returned her picture to the artist with an air of indignation, complaining that he had forgotten the best part of the picture, and had omitted the gold ring on her finger. To-day the photographer may look to see his proofs returned because he has forgotten to touch out the last wrinkle.

An oil painting looks decidedly better in a gold frame than in a black walnut frame, and it cannot be denied that a photographic print, tastefully mounted, will appear to better advantage than on common cardboard, but the artist should never forget that the time for simply mechanical, inexpressive pictures is past, and that he must set his mind to work in producing a piece of art in every picture that issues from his studio.

I refer, of course, principally to portraits, although the principle applies just as well to landscapes. The portrait photographer has his subject fully at his will. Pose, illumination, suitable appliances and surroundings are all at his command, but, above all, the artistic effect must not be overlooked, and this can only be accomplished by a close study of each individual case. The best artist, however, will be the one who succeeds in combining in his picture idealism with realism. Photography, if governed by æsthetic taste and feelings, is capable of producing pictures of great artistic effect, and the artistic instinct will quickly pass judgment and decide whether the picture is simply a mechanical copy from Nature or bears the stamp of artistic motive.

Since the development of amateur photography a good deal has been accomplished in this direction. The amateur, as a lover of photography, considering it only a pastime, is independent, and not obliged to look for profit or count the loss of materials. On the contrary, he is only a producer, and as such he tries to instill art into his pictures, and often he succeeds to a very considerable degree. Thus he becomes a promoter in photography. His pictures make their way into the family circle and among friends, they are criticized and compared with the work of professionals, and thus the taste of the public is cultivated, and unconsciously he becomes an instructor.

Will the professional, who complains that the amateur interferes with his business, not be able to compete, having, as he does, the advantages of thorough knowledge, apparatus, well-lighted studio and numerous appliances that the amateur is deprived of? I think he will, and that, entering the competition with a determination to make his competitor his teacher, he will find that as he goes on, he gradually approaches more closely to the regions of prosperity, and will discover that he has set a fashion, which his patrons will follow to the advantage of both.

THE HANDS IN PORTRAITURE.*

By Frank M. Sutcliffe.

IF a score of photographers were asked to state what was their *bête noir*, in all probability most of them would reply: the sitter's hands. The more conscientious the photographer is, the more does he study this subject. If there is one thing more than another which stamps a photographic portrait as a machine-made thing, it is the hands. It requires much skill and experience on the part of the photographer to dispose of his sitter's hands, just as it takes time for the photographer to secure a natural expression on their faces. The photographic portraitist of to-day has to fight against three principal obstacles : the nervousness of the sitter, the conventional ideas of the sitter, and the shortcomings of his lenses. The nervousness of the sitter is too often caused by the want of tact on the part of the photographer or want of tact on the part of the photographers who have taken the sitter's portrait before. Children are seldom nervous. Good-looking people are not so nervous as plain ones ; perhaps they are more confident that the result will be satisfactory; though it is well known to photographers that plain people make the best portraits, but to explain why would take us too far away from our subject.

It is the nervousness of the sitter which makes the hands so difficult to deal with. Note the unstudied graceful positions the hands fall into when there is no camera in the room, or when the photographer is not near his camera. Note how stiff and unnatural they become if the sitter thinks they are being noticed ; to expose a plate while the sitter is thinking of her hands is foolish. Unfortunately the sitter's mind changes so quickly that, if the hands are forgotten one minute, and the photographer is about to expose, the chances are that the sitter suddenly wonders whether her dress is right, and the hands are moved to feel whether the shoulders are straight or the buttons fast at the back. Then the hands are thought of again, and the artful photographer has to beguile her into forgetting them again. If he has not time to do this, the quickest way out of the difficulty is to put something into the hands, a book, a needle, or what not ; a piece of embroidery or needle-work is invaluable to the photographer, as with its aid he can find graceful employment for his fair sitter's hands.

Simple people, who cannot be classed as nervous, place their hands naturally, until attention is drawn to them. It is, therefore, wise not to speak of the hands to the sitter. One well-known dodge is to pretend to take a bust portrait while including the hands. Many people if they think the photographer is including the hands in a portrait, will exclaim, "you will not take my hands, they come out so big," suiting the action to the word, as they put them palm downwards on either knee. Every photographer of spirit will take no heed to this exclamation, if he thinks the likeness will be improved by including the hands.

This brings us to the second and third obstacles we have to contend with : The conventional ideas the sitter has about hands, and the shortcomings of lenses. People think their hands are big in a portrait because they have not learned to see properly. They imagine their hands in reality are much less than they are. Nine people out of ten will laugh at you if you tell them that their hands are as big as their face. That part of the press which pretends to tell the most beautiful of God's creations—woman—how to make herself yet more beautiful encourages the mistaken idea which people hold with regard to their hands, and in the fashion plates hands withered and shrunken to a degree, are drawn week after week. Women, who know no better, fondly imagine that they have such attenuated limbs, and express their disappointment when they find the camera is more truthful than the fashion plate. We English people pride ourselves on our honesty and uprightness, yet we are not really honest or we should send all those editors and publishers who publish such lies about hands and feet week after week to the place which is waiting for all liars. Now that photography has taught artists to see correctly they have no excuse that they do not know better.

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* From *The Photogram.*

Few people seem to have noticed the great difference there is in the shape and size of hands, and that the hands are quite as characteristic of the subject as the face is. The work people do, or leave undone, is expressed by their hands. Who has not felt a creepy sensation run down his back as he has looked at the fat flabby hands of the over-fed drone; or who has not admired the beautiful hands of the artist or musician? The painter's hand is without exception a beautiful hand, and is generally graceful in all its movements. The calling of the painter compels the fingers to be strong and yet delicate; the principal feature in the hand, the forefinger, is developed in a fine way from incessant work while the most beautiful feature, the little finger, becomes well developed, too, from being constantly used as a support and rest for the other fingers. Now that people have got rid of the foolish idea which possessed them in the early Victorian age, that work was undignified, and should be left to common people, and by the greater amount of exercise now taken the hands should be developing and increasing in beauty, strength, and size. Painters, too, are seeing the foolishness of idealizing all hands. In the September number of *The Studio*, in an article by Arthur Bell, on the work of Cecelia Beaux, we read: "Artists with few exceptions paint the hands of all their models in the same style." Vandyke, Reynolds, and Romney are quoted as erring in this respect, while the work of Cecelia Beaux is spoken of highly as showing most careful treatment, for, according to Mr. Bell, that artist paints the hands as they are, and not as she thinks they ought to be; the hands in one example of a lady, holding a black cat on her shoulder, are highly spoken of because "no attempt has been made to tone down or idealize their somewhat clumsy character."

Unless the sitter gives the photographer or painter all the help she can with regard to the matter of dress, a successful picture cannot be depended on. All ladies and all photographers know that the hands look more conspicuous on a dark dress than on a light one, and that they require more careful study in the former case. When the hands stand out by contrast from their darker surroundings, the lady who wishes her hands to come out large should put on a dark dress. However, it is not often that this wish is heard, for the use of short focus lenses has made the hands in very many portraits appear too large. If photographers would only use lenses of two or three times the focal length of the diagonal of the plate we should hear no more of the exaggeration of the camera and lens, and the reproach that the writer's father once made that "Photography at its best was but the reflection of a gutta-percha world in a brass door-handle" would not be cast in its teeth. We all know how a brass door-handle exaggerates the end of our nose as we look into it; short focus lenses do the same in a lesser degree.

In the case of a three-quarter or full length portrait in dark drapery, we find the hands, the only other unclothed part of the body, stand out by contrast from the rest, and catch the eye often before the face. Painters and engravers have noticed this, and have kept the hands down by lowering their tone. The photographer can do this if his sitters will let him, but the photographer too often gets sat upon by his customers for attempting to make their portraits pictorial; that a photogram should be anything but a hard, bare, record of as many thousand little facts as possible, is not tolerated by many. Even men who should know better will complain that they had washed their hands and had not been playing with the coals, if the photographer, in his excess of artistic zeal, has attempted to lower the tone of the too white hands.

In a photographic portrait we are seldom called on to express anything but repose. The fingers are therefore kept near together and are not separated as when animation or fear, or greed separates them, but a sensitive person will, while speaking, gesticulate with the fingers more than a less sensitive one; the sensitive person will appear to speak with every finger, especially with the forefinger, the little finger, and the thumb, and it will be noticed that the forefinger and the little one will often be in advance of the middle and third fingers. Advantage may be taken of this by the photographer; for when these two fingers are in advance, they partly hide the rest, and so make the hand appear more expressive.

As some people seem to be unable to move their necks, but move their whole bodies, when they need only move their heads, so some people seem to have no use in their wrists. A beautiful hand is always joined to a flexible wrist; sometimes if the hand appears stiff a request to the sitter to bend the wrist a little will make it all right.

A position for the hands, or at any rate for one of them, which is eminently useful, is when the hand is made to support the head; if care is taken to show the edge or inside of the hand almost any hand looks well. The hand can be used to support the forehead, when the head is bent down; or the chin, when the head is higher.

Some people have beautiful thumbs which give a beautiful curve from the end of the nail to the wrist.

Sometimes part of the hand can be hidden in the folds of the dress, and any extra width reduced.

Examples might be multiplied indefinitely, but enough has been given to show that observation on the part of the photographer is the only thing required to pass into oblivion the objection: " hands come out so large always."

THE UNCONVENTIONAL IN PORTRAITURE.

By C. H. Hewitt.

THE average professional photographer who essays the production of work which shall possess, in any degree, the merit of originality, must be prepared for many disappointments, and with such aspirations he is, indeed, fortunate if he possess a capacity for seeing the humorous side of things, and a sufficiently prosperous business to render him indifferent to the time and expense of a proportion of resittings.

We have recently come across the two extremes of the professional's clients. At the salon—where even the photographer from the provincial ends of the earth must go each year to gain inspiration for fresh effort—we heard a gentleman admiring Mr. Craig Annan's magnificent portrait of W. Q. Orchardson, Esq., R. A., and enquiring of Mr. Craigie whether the photographer lived in London, and was open to produce such work commercially; or, failing him, where else such portraiture might be obtained. The other extreme was represented by a sitter who complained of his cabinet proof that it was no good at all, because it was a 2-inch head and printed plain, whereas, his preconceived idea of a conventional portrait was a 1½ or 1¼-inch head vignetted. His criticism that the portrait was "more than life size" was distinctly original, but shows pretty plainly that with certain sections of the public the production of the stereotyped article is the only course open.

Between these two extremes, however, lie the professional photographer's clients, and the enthusiastic worker must endeavor, by the exhibition of a varied selection of specimens, to gauge the individual taste, always tactfully coaxing his customer, if the expression may be used, into the selection of work a trifle higher, instead of lower, than his preconceptions.

To gain this end any means may be considered legitimate. With some, the suggestion that a certain class of work is fashionable will bring about the desired end, while in other cases the better work is bought simply because it is more expensive. In some instances the photographer may be able to show the superiority of individualistic portraits over the billiard ball, retouched and vignetted. There is always a proportion of clients willing to be guided, more or less, by the photographer's opinion. For these the photographer should be prepared, and portraits printed in platinotype or carbon may be shown, contrasted with the average vignette head and shoulders on P. O. P. Whenever, without tedious explanations, such an object lesson can be given, the increase of appreciation and advance in public taste are bound to react to the photographer's own advantage, and will also tend to raise the profession as a whole.

In this connection we may remark on the advantage of having in the shop or reception-room, and on the walls of the studio, reproductions in autotype or photogravure of works by the world's greatest artists. Not only are such pictures valuable in creating an atmosphere of refinement, but their unceasing influence on the photographer himself cannot but be beneficial. It is not amongst the opportunities of all to see the latest works of art at each year's Academy, nor even to spend frequent hours in the National or other galleries, where permanent collections of art treasures are gathered together. But our own art has insured for us faithful reproductions of these treasures, which may be selected with judicious care and lived with. Hung as we have suggested, on the walls of the reception-room or studio, they form a splendid foil for the ordinary, every-day photograph ; and although the photographer's highest and most successful efforts may be far beneath such work as Andrea del Sarto's portrait of himself, or the works of Rembrandt, Vandyke, Moroni, or Gainsborough, yet the sight of reproductions of such masters may convince a recalcitrant sitter that half-tone in faces and dark backgrounds have at least a recognized precedent.

One occasionally meets with the remark from, say, the lady in the reception-room, that the efforts in the direction of artistic portraiture are misdirected, and that sitters do not want it. A case was recently quoted to us, in which a lady said she cared not whether the photograph was like her or not, so long as she was made to appear beautiful. We are far from asserting that such cases do not exist, and not infrequently the one who receives the majority of clients is in a better position to judge of what they wish than the operator in the studio, who photographs them. But the fact still remains that it is possible to produce a portrait which shall make the most of the available material, and at the same time be both unconventional and artistic. Nor do these features involve that the portraits possessing them will be in the least degree ugly, as many seem to suppose.

To take an instance, the conventional portrait gives strong detail everywhere. But how great a power is placed in the photographer's hands if he may, by suppressing detail to a great extent in shadows, hide at the same time, and by that means, the awkward line or the ungainly form ; for, after all, few sitters are classic in their proportions. It is a somewhat common expedient to pose so that facial deficiencies are hidden. Why not carry out the same principle in a slightly different manner when we come to the figure itself? Our point is simply this: Most thoughtful workers know that they have the power to improve their work by such suppression. They are afraid to practice the suppression, however, because it is unusual, and so they go on producing work which is not as good as it might be; not so good as they could, and would, make it. The sitter, then, and that means the public, must be gradually brought to accept such suppression, and not always to expect strength and contrast in the details. The more the photographer aims at this the more individuality will his work possess, and the more power will he gain for further improvement.

In cases where any unconventional treatment is against the sitter's wish, or where, for instance, the ivory flesh texture is demanded, the commercial man unhesitatingly meets his client's views and wishes. Said a tailor to us the other day: "Give the people what they want. If a man comes to me and wants his trousers to go up to his neck, I shall make them so for him." "Possibly," we replied, "but you would hardly put them in your window as a specimen of your skill in cutting." In tailoring the public would at once consider the man who wore such clothes as a crank, and would absolve the maker of them from all blame. We recollect, too, the case of a printer who had instructions to print in a local guide-book an advertisement upside down. To safeguard himself he printed neatly in one corner the words, "to order," lest, as he said, people should think he had been "three sheets in the wind" when "making ready." We fear a good many photographers would like to place the responsibility, where it often ought to lie, by marking their productions in the same way. But it cannot be done, and the gratification of whims, the outcome of the sitter's lack of taste is a permanent record telling always against the man whose name appears at the bottom of the mount.

Of course, so long as tastes vary, so long will the portraits emanating from a particular studio, and possessing certain characteristics, be admired by some and depreciated by others. This being so, and a percentage of disapproval certain under ordinary conditions, the ambitious worker who believes with Mr. Crooke that the photographer whose work shows art training and individuality will be more and more sought after, must decide whether he will risk the bad advertisement of prints which are not in accordance with his own ideas, or whether he will refuse to photograph at all, if he may not be master of the situation. This course, as we have already hinted, can be pursued in those cases where the professional, as opposed to the trade, position must be maintained, and there the consequences are most serious if any thoughtless pandering be allowed.

The photographer doing a cheap trade frequently finds it all the other way, and knows that the mere exhibition of work such as would find acceptance at any of the principal shows of the year would be calculated to frighten away the general run of artisan sitter.

In the middle-class business, however, the way can be gradually felt, and the best type of work produced where circumstances warrant it. The professional whose heart is in his work will be always on the lookout for these opportunities of introducing a little leaven, and where appreciation follows his effort, the occasions will be something like oases in the desert.

It is necessary to sound one word of caution. However pictorial the picture may be, it must be a portrait. If it be such, its pictorial qualities will be enhanced ; but if it is not, then those pictorial qualities will, as likely as not, be blamed for that very lack of likeness. The path is beset with difficulties, obstacles and criticisms unforeseen, well nigh insurmountable, and absurdly unanswerable. But in spite of this it is worth taking, to the man whose heart is in his work, for along that path, if one rightly reads the signs of the times, lie not only reputation and satisfaction, but profit as well.—THE AMATEUR PHOTOGRAPHER.

TEACHINGS OF DAGUERREOTYPE.

(*Continued from January* BULLETIN.)

THE relation of the halogens to hydrogen is the reverse of their relations to oxygen, for which iodine has a much greater affinity than chlorine, while bromine occupies an intermediate position. In presence of water iodine can act as an oxidizer, but has very little bleaching power. Iodine, however, does not combine with oxygen under the influence of sunlight, either in presence or absence of water. There is no combination either between bromine and chlorine with oxygen in sunlight. It may be noted also that oxygen is not converted into ozone by the action of sunlight.

According to Mendeléeff (English translation, fifth edition, I. 465), under the influence of light chlorine is able to replace hydrogen by virtue of an action termed *metalepsis*, which is always accompanied by the formation of hydrochloric acid. In the dark chlorine does not usually act on hydrogen compounds, but the action commences under the influence of light. The direct action of the sun's rays is particularly propitious to it. It is also remarkable that the presence of traces of iodine added to the substance subjected to metalepsis often produces the same effect as sunlight. This action may be due to the formation of iodine chloride, which reacts more easily than chlorine. Bromine and iodine possess the same properties. Iodine itself, however, does not act by metalepsis on hydrocarbons on account of the easy decomposability of hydriodic acid, especially under the influence of light.

As not only their oxygen compounds, but also their hydrogen compounds, have acid properties, the halogens are elements of an exclusively acid character. This character is more strongly developed in them than in any other elements. This acid character of the halogens is very distinctly marked in all photographic processes.

Robert Hunt says of them (*Researches on Light*, page 279) : "Chlorine, iodine, and bromine, it is well known, act with considerable energy upon metallic bodies. If, however, any polished metal is exposed to the action of them in a diluted state, the combination is at first exceedingly small, and the films that are formed by either of these three elementary bodies upon any metal undergo considerable change under the influence of the sun. In most cases it appears that these bodies are set free, and the metal left in a state of very fine division or oxidation. Copper, tin, iron, zinc, lead, pewter, bismuth and several other metals have afforded the same results. It is still more remarkable that films of bromine or iodine on glass are found under the action of the sun to act in a similar manner."

Combinations of Halogens with Silver.

According to Mendeléeff, silver gives insoluble and exceedingly stable compounds with the halogens. They are obtained by double decomposition with great facility whenever a silver salt comes into contact with halogen salts. (As I lately showed, this combination takes place even with dry powdered salts.) The degree of affinity of silver for iodine is greater than that for chlorine or bromine, so that, when exposed to light, the iodide does not part with its iodine as the chloride and bromide do with a portion of their chlorine and bromine.

Beketoff has explained the fact that silver iodide is more stable than the chloride or oxide by an original hypothesis—that the most stable compounds are those in which the weights of the combined substances are equal. Thus silver oxide is less stable than the chloride, and the iodide is the most stable.

Silver iodide is also more stable in respect to the action of light than silver chloride. Silver chloride quickly darkens and appears to be decomposed into chlorine and silver. Silver bromide and iodide are much more slowly acted on by light, and, according to certain observations, when pure they are quite unacted on—at least, they do not change in weight; so that, if they are acted on by light, the change they undergo must be one of a change in structure of their parts, and not of decomposition, as it is in silver chloride. Silver iodide in presence of a large excess of silver, as in the Daguerreotype plate, darkens as readily as the chloride does when exposed with excess of silver nitrate.

As a combination of silver with iodine vapor forms the basis of the sensitive surface of the Daguerreotype plate, we may first of all consider it.

Silver Iodide.

Silver iodide is usually formed by precipitation from mixtures of solutions of silver nitrate and potassium or other metallic iodide. According as the silver or iodine is in excess, it has either a full yellow color and is slightly darkened by light, or a very pale yellow color, almost white, and is scarcely changed in color by light.

We are, however, more interested in the comparatively little known forms of anhydrous iodide produced by the direct union of silver and iodine, and generally in immediate contact with metallic silver.

Before proceeding to consider the composition and behavior under the influence of light of the sensitive surface of silver iodide on the Daguerreotype plate, it may be as well to examine the action of iodine upon silver in a very fine state of division. This can be readily done by adding iodine in various proportions to precipitated silver, and the resulting mixtures are more easily tested with various reagents than can be done on a plate.

Unless the iodine is in a very small proportion compared with the silver powder, the two may combine with a sudden rise of temperature and flame, the iodine vapor rising and going off in violet fumes. The iodine must therefore be added only a little at a time, and be kept constantly stirred. In this way the full quantity required to produce the iodide, AgI, may be added.

Mixing precipitated silver thus with iodine in different proportions, such as 108 parts by weight of silver to 12.7, 37.1, 63.5, 95.2, and 127 parts by weight of iodine, we obtain a series of powders varying in color from a gray or chocolate brown to an olive yellow, and finally brick-red tint. This last was shown by the preparation containing 108 parts of silver to 127 of iodine. It still contained a quantity of uncombined iodine as well as some uncombined silver inside the grains, but, if left in the air for a short time the excess of iodine evaporated and the powder turned to a deep orange yellow.

All the lower compounds are readily blackened by light, but the higher ones, with 63.5 parts of iodine [subiodide Ag_2I (?)] and upwards, are not so visibly blackened, and with the full quantity of silver and iodine to form the iodide (AgI) the mixture does not blacken at all in the light, just in the same way as the ordinary yellow iodide prepared by precipitation is not blackened.

This shows that the darkening is a function of the silver, increasing with the excess of silver and diminishing or entirely disappearing with excess of iodine.

If, however, we add precipitated silver to iodine, the yellow iodide is not formed at all, even when the full combining proportion of silver is added. This seems to be due to the iodine forming a coating on the silver grains which stops further action. The resulting compound is of a dark brown color with no grains of yellow iodide, as is the case when the iodine is added to excess of silver. By leaving the brown mixture till the excess of iodine has gone we obtain the same brick-red compound, which becomes yellowish on further exposure to the air. If more silver be added to take up the excess of iodine, the lower compounds are formed. I have not been able to very closely examine these curious compounds or mixtures of silver and iodine, but they seem worth further investigation.

There is one curious fact connected with the darkening of these mixtures or lower iodides which has already been noted, and that is that there is no loss of weight after exposure to light. Iodine is not set free, as is the case with chlorine or bromine, and it is difficult to know what the action really is, and whether there is any chemical decomposition by catalysis or otherwise, or whether the change is only structural. Recent researches by H. Scholl, to which attention will be drawn further on, seem to throw considerable light upon this question.

Composition of the Sensitive Surface of the Daguerreotype Plate.

That the sensitive surface of the Daguerreotype plate is formed by one of these lower compounds of silver and iodine, and not of the pure iodide, AgI, is, I think, shown by the fact that, if we iodize a thin film of silver leaf or silver on glass till all the silver has combined with iodine, we obtain an almost transparent pale yellow film, which no longer darkens very visibly, even in bright sunshine, and is very insensitive, requiring long exposures to produce even the developable image. If, however, we expose a fairly thick plate of silver for several hours to the fumes of iodine, this yellow iodide is not formed at all, and we have instead a dark brownish or olive-colored deposit, which is readily darkened by light, just as the iodized silver mixtures were, and as the Daguerreotype plate is. Some of this darkened deposit, treated with potassium iodide partly dissolved, the remainder still retaining its blackness; the addition of distilled water turned it yellow, the further addition of KI further dissolved it, but still left a dark purplish precipitate, which, being treated with nitric acid, behaved exactly like the original unexposed deposit, evolving iodine. HCl gave no precipitate of silver chloride, and therefore free metallic silver could not have been present.

Hence the surface of the Daguerreotype plate may be looked upon as iodized silver, or a compound containing a very small proportion of iodine in more or less loose combination with a large excess of silver. On exposure to light no iodine is set free or lost, but compounds are formed at the surface containing a larger proportion of silver, and therefore darkening more readily up to a certain limit, while the iodine penetrates more deeply, and attacks the underlying silver surfaces. That this is the case is shown by the fact reported by Moser, and also by Robert Hunt, that the darkened surface of an exposed Daguerreotype plate may be removed several times over, and still the under surface will remain sensitive. I have myself done this fifteen times over without exhausting the iodine or entirely destroying the printed-out image first impressed on the plate, and it was very remarkable how this original image came up apart from the ground after each exposure, which was taken up to solarization point or beyond.

If, however, the proportion of silver to iodine is normal or in defect, and we have the anhydrous yellow iodide or orange super-iodide formed, we find that it does not darken in light, or only becomes a deeper yellow. A sample of pure yellow iodide, which was obtained from a well-known firm, shows this effect very distinctly on exposure to strong sunlight, but it loses this deeper color again in the dark, becoming once more a pale lemon yellow.

Professor Meldola has suggested that the silver iodide on the Daguerreotype plate forms its own sensitizer, and, from what I have seen of the deepening in color of the above samples of iodide and others under the influence of light or when treated with an excess of iodine, I have little doubt that this is the case. As we shall see later on, iodine may even exert an active sensitizing action upon pure silver iodide.

TALBOT'S IODINE RINGS.

One of the most striking points with regard to the action of iodine on a polished silver plate is the series of interference colors it produces, in accordance with the thickness or varying composition of the film of iodide produced, and I cannot do better than show you an old experiment which was first tried by Fox Talbot, and described in the *Athenæum* for 1839, page 643, also in Hunt's *Researches on Light*, page 102. If we place a small crystal of iodine on a polished silver plate or a silvered glass, and warm it gently with a spirit lamp, we shall at once see a series of about seven sets of concentric rings, forming prismatic or interference colors exactly similar to those of Newton's rings, or rather Nobili's rings, which are Newton's rings reversed. First, outside we have a bright yellow, and within this there arise successively rings of green, red and blue, and then again a fine yellow circle, centered by a grayish spot on the place occupied by the iodine Now, if we cover up one-half of the series of colored rings and take the plate into the sunshine, we shall see one of the most striking and beautiful exemplifications of the action of light it is possible to conceive. The rings are sensitive to light, their colors change and become intensified, producing quite a new series of rich prismatic tints, which completely illustrate and prove the fact I have just drawn your attention to, that darkening increases in proportion to the excess of silver, and lessens with the increase of iodine. The outer circle, which before exposure was only a pale rose color (the most sensitive iodide color), is now a deep brilliant green shading into a strong reddish violet, and then into beautiful dark blue, succeeded by a broad white or very pale green merging into a deep yellow, succeeded by a series of fine well-marked concentric rings of much the same tint as the original unexposed rings, but deeper and brighter. The tints vary somewhat according to the length of exposure. The outer rings produced by the thinnest stratum of iodized silver, furthest from the center, must be in a very loose state of chemical aggregation. Talbot says the colored rings seem to consist of silver iodide in various stages of development. If we turn the plates downwards at an angle of 45 degrees to the light, we shall see that the colors are reversed and show complementary tints.

There is another method, due, I believe, to Wiener, by which these colors can be shown, and almost more brilliantly, by resting the plate on a glass cylinder while being iodized. This produces a double set of colored bands, one on each side of the central blank space, as you will see. Viewed by reflected light, the complementary colors are very rich, and almost fluorescent in their luminous intensity.

These gorgeous tints do not, however, represent any distinct chemical change in the composition of the sensitive surface beyond the production of films of iodized silver of varying thickness; and if, after exposure to light, we submit the plate to the fumes of mercury vapor, or treat it with an acid iron and silver developer, we shall get no distinct image of the series of rings, but only two or three bands or regions of increased or diminished sensitiveness. With short exposures these bands are fairly distinct, as you will see from the example I have with me. The same result is obtained with images simply fixed with hyposulphite of soda. The outermost rings show an increase of action, which is succeeded in the broad bluish or greenish-white band by a decrease, the action increasing again towards the central series of rings. The behavior of these colored rings under colored glasses will be noticed further on.

RELATIVE SENSITIVENESS OF TINTS PRODUCED BY IODIZING.

The relative sensitiveness of the various tints produced on the surface of a Daguerreotype plate by the vapor of iodine was first studied by Professor J. W. Draper, of New York, and his results are recorded in a paper published in the

L. D. E. Phil. Mag. for September, 1841. He found that the plate passed through the following stages of color:

1, lemon yellow; 2, golden yellow; 3, reddish yellow; 4, blue; 5, lavender; 6, metallic; 7, yellow; 8, reddish; 9, green, etc., the differences of color being produced by the differences of thickness in the film of iodide, and not by any difference of chemical action.

Talbot's rings show this fairly clearly. The outer rings are colored much as stated by Draper, then comes the strong second yellow, followed by red and green, and, as the iodine acts longer and produces a thicker film, the rings become closer and darker as well as less sensitive to light. I find, however, that they attract mercury vapor readily after exposure.

Having prepared nine plates showing the different tints above indicated, Draper exposed them under uniform conditions to the light of a gas flame, and found that No. 1 showed a well-marked action; No. 2 still stronger; but that the rays had less and less influence down to No. 6 (metallic), in which they appeared to be almost without action; but, in No. 7 (second yellow), they had recovered their original power, being as energetic as in No. 2; and from that they declined again.

Hence, as Draper says, we see that the sensitiveness of the iodide of silver is by no means constant; that it observes periodical changes, depending on the optical qualities of the film, and not on its optical composition; that by bringing the iodide into those circumstances that it reflects the blue rays, we greatly reduce its sensitiveness, and still more so when we adjust its thickness so as to give it a gray, metallic aspect; but the moment we go beyond this and restore by an increased thickness its original yellow color, we restore also its sensitiveness.

Upon this and other observations, Draper, so early as 1841, laid down, among others, two important propositions upon which all photographic action is based:

"That the chemical action produced by the rays of light depends upon the absorption of those rays by sensitive bodies, just as an increase of temperature is produced by the absorption of those of heat.

"That the sensitiveness of any given substance depends on its chemical nature and optical qualities conjointly, and that it is possible to exalt or diminish the sensitiveness of any chemical compound by changing the character of its optical relations."

The first of these propositions has been termed by Professor Meldola, Draper's law.

The practical application and extension of this principle led the late Dr. H. W. Vogel to the discovery of the modern system of orthochromatic photography, and, by applying suitable dyes, or, as he called them, optical sensitizers, to the ordinary photographic dry plates, he found that they could be rendered sensitive to the rays at the less refrangible end of the spectrum for which they are ordinarily insensitive. I cannot, at present, go further into this question, but it is important to note that this most important discovery was based to some extent upon Draper's observations of the different degrees of sensitiveness produced on Daguerreotype plates, according as the color of the sensitive surface of silver iodide affected its absorption of the rays of light.

DEVELOPING ACTION OF RED AND YELLOW LIGHT.

One of the most curious and remarkable phenomena connected with the early working of Daguerreotype plates is the action of red or yellow light upon the images formed either in the camera or by printing out. Thus, if we give a short normal exposure to an iodized silver plate, and instead of developing it in the ordinary way by the vapor of mercury or by treating it with an acid, iron, and silver developer, we expose it in the sun under a red glass from fifteen to twenty minutes, we shall find to our astonishment a completely printed-out image, containing quite as much, if not more, detail than would have been shown by the deposited mercury or silver, while the protected parts originally unaffected by the light, remain perfectly unchanged, and, on fixing with hyposulphite of soda, retain all their original brilliancy and clearness, as you will see. The curious thing is that the iodized silver coating shows itself quite insensitive to the action of light passing through the same red glass which, after even the faintest action of white light has affected the sensitive surface, will continue the action and carry it to full intensity, and even on to bronzing or solarization.

This phenomenon seems to have been first discovered by Ed. Becquerel when working with the spectrum. He found that if an iodized silver plate were exposed to the spectrum it was not sensitive beyond a point more than half way between G and F; but if the plate had previously received a short exposure to light it was then sensitive to the whole length of the spectrum up to B, and from this point to beyond A there were signs of reversal or destruction of the image. Becquerel, therefore, called the rays at the most refrangible end of the spectrum the *rayons excitateurs*, while those at the less refrangible end he called *rayons continuateurs*.

Shortly afterwards Gaudin succeeded in developing an image as perfect as that produced by mercury by submitting the plate when taken from the camera to the action of light under a yellow glass and without any subsequent exposure to mercury.

Claudet, Hunt and others also investigated this curious phenomenon, and a good many explanations were put forward regarding it, but the one given by Bunsen and Roscoe in their paper "On the Phenomena of Photo-Chemical Induction," in the *Phil. Trans. Roy. Soc.*, 1859, page 400, whether correct or not is interesting in other respects. As it is not generally known, it may be worth quoting from the original, because it seems to have a distinct and important bearing upon other obscure phenomena connected with the formation of the invisible developable image on photographic plates of all kinds.

PHOTO-CHEMICAL INDUCTION.

By photo-chemical induction the authors mean the act by which the resistance to chemical combination of different bodies is diminished by the active agency of light.

"The laws of photo-chemical induction, which we have here developed, explain most completely many of the singular phenomena which lie at the foundation of the photographic processes. Without entering into detail concerning the relations which these laws bear to the general processes of the photographer, we will now merely consider one phenomenon which has been so difficult to explain that it has been found necessary to assume the existence of certain rays endowed with very peculiar properties, to which the name of *rayons continuateurs* has been given. This phenomenon was first established by Edmond Becquerel from the following observations. If one-half of an iodized plate of silver or a sensitive photographic paper be protected from the action of light while the other half is exposed to a constant source of light for such a time that no alteration, either perceptible to the eye or capable of being developed by photographic preparations, is effected on the sensitive surface, the plate possesses the property, when exposed to a uniform but very slight amount of light, to blacken on the insolated half, while the part not previously exposed remains unaffected. If, in the first short insolation, every part of the plate was not exposed to the same intensity of light, the blackening effected by the following uniform exposure corresponds to this intensity, so accurately, indeed, that a Daguerreotype picture commenced by this slight exposure may be developed by subsequent uniform insolation almost as perfectly as if each amount of light represented on the picture, and not a constant amount, had acted for the whole time upon the plate. The explanation of this fact does not require the assumption of a new class of rays, which cannot commence, but only continue, the photo-chemical action. The phenomenon is in reality a simple consequence of the laws of photo-chemical induction, and proves that these relations, which we have examined only in the case of chlorine and hydrogen, occur in a slightly modified form in other photo-chemical processes. If the chlorine and hydrogen mixture were a solid substance which could be fixed upon paper without diminishing its sensibility to light, this paper must exhibit exactly the same singular property which Becquerel first observed with the Daguerreotype plate, or other photo-chemically sensitive surface."

(*To be continued.*)

THE NEW *VS.* THE OLD.

By E. M. Estabrook.

Guerin, of St. Louis, stands in the front rank of photographers as an artist and a connoisseur. He is a practical workman, and his opinions concerning a matter of taste or artistic merit should be held beyond cavil by the profession, but, as men are of different minds, *de gustibus non disputandum* is the final decision.

It was, therefore, with great delight that I read Guerin's letter concerning "Freak Photography," and I fully coincide with his ideas on the subject. If Guerin is not right in his stand, then the world does not move from good to better; then study and observation and hard work accomplish nothing of progress and advancement; then the artists of the olden times, with their crude colors and imperfect tools, are the cynosures, and the later disciples of art should be only imitators. This is all rot. The painters of to-day as far exceed the old masters in harmony of colors, in delicacy of detail, in correctness of drawing, and in beauty of finish as does the lily exceed the best efforts of them all. Nature, then, is the teacher that we must all go to for instruction in art matters. Man's taste becomes vitiated, but Nature's ever remains true to the model set by the greatest artist of them all—the Creator.

Now, if we take Nature's as the standard, must we not accept Guerin's opinion as the nearest right? He says flowing lines, richness of detail, and lustrous surface—commonly called chemical effect—approach nearer the divine plan than the crude fuzziness, the deadly flatness and harsh contrast of the so-called new style, but which is nothing on earth other than an attempt to cover up incapacity and ignorance by an attempt to revert to the earlier dark ages, in imitation of the old masters, who are only masters because, considering the times in which they lived and their limited facilities, they accomplished wonderful things for their age.—*Photographic Mosaics for 1900.*

SELF-TONING AMERICAN ARISTO PAPER.

When the American Aristo Company put out that Single Toner for their magnificent paper we thought the acme had been reached, but now we are treated to the surprising and gratifying notice that they are making self-toning collodion paper. We shall soon make this paper the subject of a special article in "Editor's Laboratory," and shall be impatient to tell our readers what comes of the test, because the Aristo Company make such absolutely perfect paper that the result of our early trial is a foregone conclusion with us. We are glad to know of a reliable firm who make this convenient article, and trust that our readers will either send direct or ask at their dealers for American Aristo Self-Toning Paper. It will save much time and expense, and besides, from such results as we have already seen, it will reward artistic photographers with no small surprise.—*The Photo-American.*

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Photograph by RAY, Asheville, N. C.

ANTHONY'S
Photographic Bulletin.

EDITORS:

PROF. CHARLES F. CHANDLER, PH.D., LL.D.
W. I. SCANDLIN.

VOL. XXXI. MARCH, 1900. NO. 3.

OUR NEW HOME.

BY the time this number of the BULLETIN reaches its readers our publishers will be established in their new quarters, at 122–124 Fifth avenue, in the beautiful new Mercantile Building, which is in process of completion as we write.

Our publishers have been for a little more than thirty-one years located at 591 Broadway, having moved to that number from 501 Broadway on the 10th of February, 1869, and, while the move was then considered to have provided ample facilities for the growth of the business, the necessity for a location farther up town, with more modern appliances for the handling of goods, has been long apparent and has resulted in the lease of the entire second floor of the Mercantile Building, on the west side of and fronting on Fifth avenue, and extending at the rear to 17th street on the south and 18th street on the north.

As the approaching change of location is a new event in the life of the BULLETIN, which was first published in January, 1870, at 591 Broadway, we take this occasion to present to our readers a short description of our new quarters, a personal inspection of which, by any and all, our publishers most cordially invite.

The building, constructed of granite, limestone, brick and terra cotta, after the style of the Italian Renaissance, presents a handsome appearance, and is fireproof throughout. The entrance on Fifth avenue is rich and handsome in effect, being flanked on each side by massive columns of polished granite, finished inside with marble, mosaic and ornamental iron scroll work, with walls and ceilings decorated. Immediately within the entrance are three commodious electric passenger

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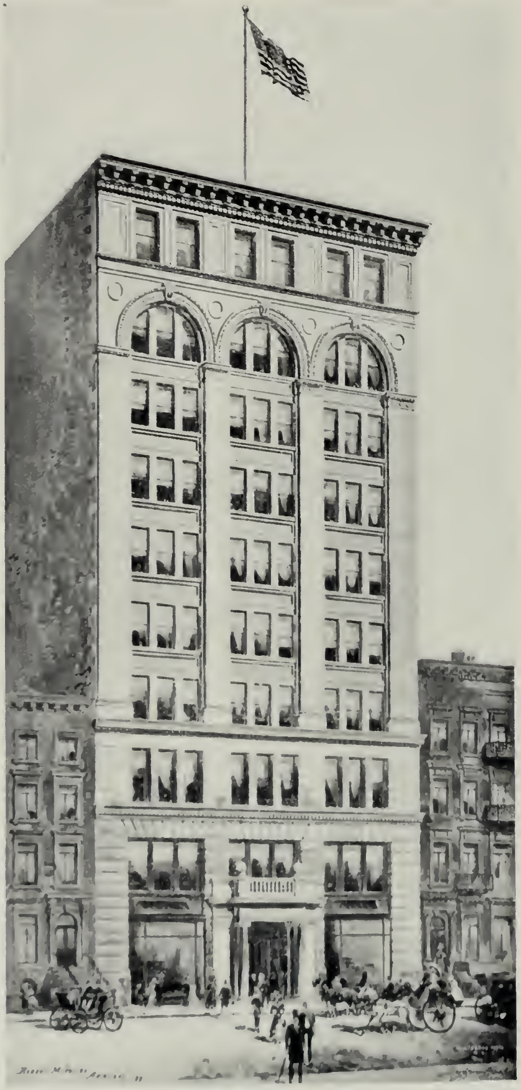
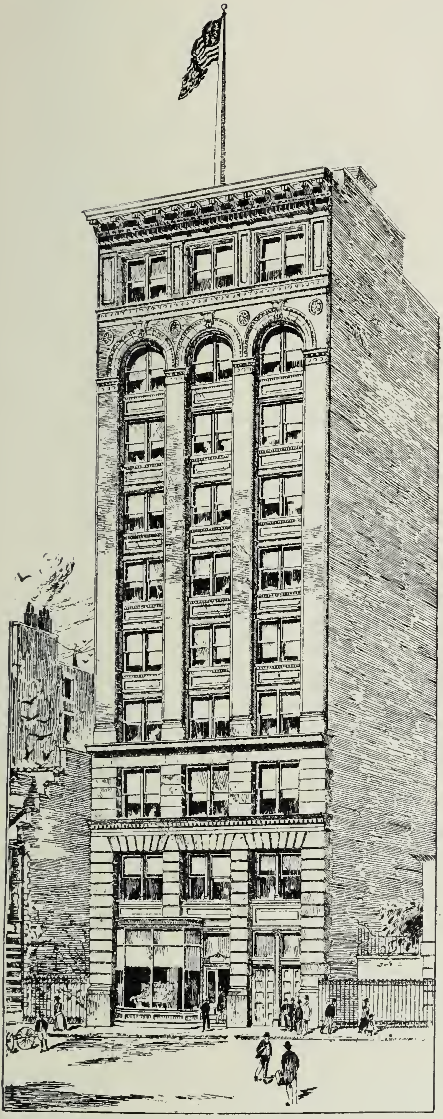
elevators and stairway, giving access to the floors above, the first of which is to be the home of E. & H. T. Anthony & Co., until further notice. Taking the elevator one flight up, the visitor will find himself in a large, T-shaped room, the foot of the stem of the T resting on

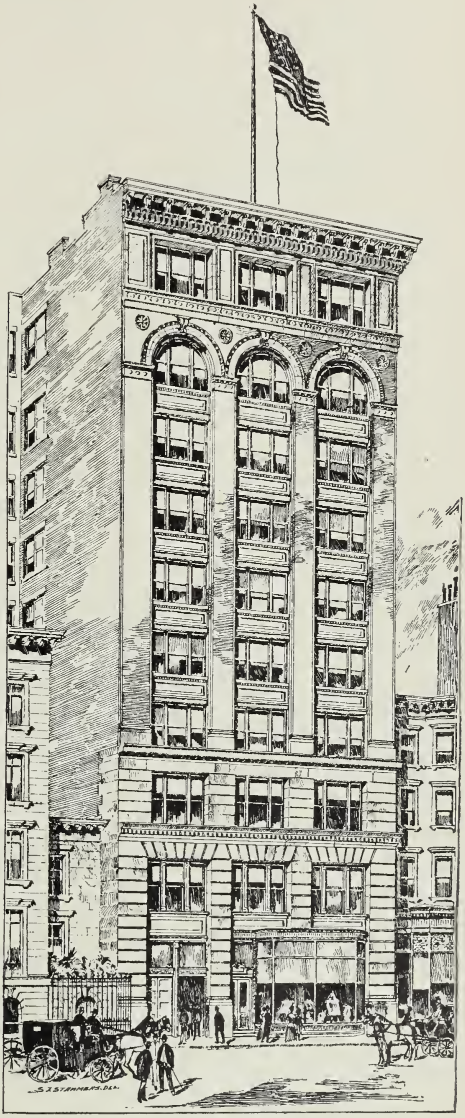


Mercantile Building, Fifth Avenue, Front.

Fifth avenue, and the top crossing the stem at right angles and facing on 17th and 18th streets, as shown in the diagram which follows. In the front of the store, on the Fifth avenue side, will be found the offices of the firm and of the book-keeping department, while opposite to and facing the elevator will be located the retail department and desks of city salesmen. The Bulletin and publication and advertising departments will be farther down the store, facing on 17th street, at the intersection of the top and stem of the T. Four large electric elevators, two each in the 17th and 18th street ends of the building, afford ample facilities for prompt and economic handling of goods, either coming into or going out of the store, and in this portion of the building will be found the receiving and shipping clerks, the wholesale department and the foreign order desk, and here also the chemical department, which will be separated from the rest of the store by a fireproof partition.

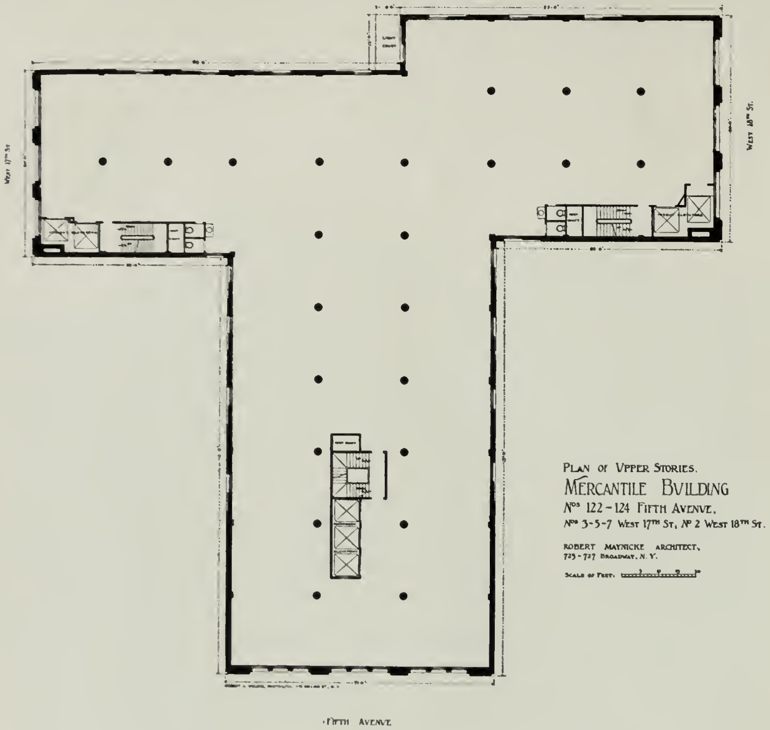


17TH STREET FRONT



18TH STREET FRONT.

The entire building is supplied with steam heat, and is fitted with both gas and electric lights, and it is the hope of our publishers that, with the increased facilities for doing business which the new location will afford, they may be able to fill the increasing demands of the trade promptly and to its entire satisfaction in the future, as they have endeavored to do during a period of more than fifty-eight years in the past. It is hoped that the many friends and customers of the house will make an early call and become personally acquainted with the geography of the new store.



OBITUARY.

AS the Bulletin goes to press, word is received of the death of Mr. Aimé Dupont, one of the best known photographers in the profession, who has for the past fourteen years been established in Fifth avenue, New York.

Mr. Dupont was born in Belgium fifty-eight years ago, and graduated from the School of Mines, at Liege, after which he was for some years connected with the Maison Walery, in Paris. His skill as a sculptor was equal to that as a photographer, and a number of important pieces, among which is a bust of Mr. Washburne, former United States Minister to France, remain to do him credit. A widow and one child, a boy of ten, survive him.

Items of Interest

IN a recent lecture before the Department of Photography of the Brooklyn Institute of Arts and Sciences, Mr. Alexander Black defined artistic photography as that which, beside showing the bare record of fact, introduced the impress of the worker's mind as well, and illustrated this thought by saying that "If ten men photograph a tree with the same lens and all the products are precisely alike, the medium and the method are scientific. If it is possible, however, to take the ten products and identify each of the photographers by the style of his work, the medium has begun to be in some degree artistic. It could not be wholly artistic under any circumstances so long as a mechanical lens intervened; but it could be artistic just in the proportion in which the ten men or any of them managed to impress their individuality upon the report of the tree."

* * *

ON Friday evening, February 9th, Mr. Maximilian Toch lectured before the American Chemical Society on "The History of Photo-Chemical Improvements." The lecture was illustrated by experiments, Mr. Toch showing the action of various kinds of bromide of silver, and demonstrating their difference in the slow bromide of developing papers and quick bromide of plates. The various bichromated gelatine and carbon processes were also shown, and his remarks on color-photography created a lively discussion among the various professors of chemistry who were present. The meeting lasted until eleven o'clock and was voted a great success.

* * *

A QUESTION of copyright which will be watched with much interest is involved in a threatened suit by a prominent Southern photographer, backed by the Photographers' Copyright League of America, against a leading weekly illustrated paper for infringement of copyright in the publication of a photograph from which the copyright imprint and photographer's name had been removed and the picture published without permission. The whole question of copyright is in a condition that seems to require careful attention and adjustment to the conditions that have arisen with the advance in process work, and there are many points in the law as at present interpreted which appear to impose hardships and lack of protection on those who were originally intended to be relieved by their enactment. We hope the matter will be brought before the next Convention.

Extensive preparations are being made in scientific circles to obtain photographic records of the total eclipse of the sun, which will take place on the 28th of May next, and which will be visible in North America in a path across the southern parts of the United States, following a line drawn through the cities of Norfolk and New Orleans, and extending across a strip of country about fifty-five miles in total width. This is the first total eclipse visible in the United States since 1889, and all the aids known to science will be employed in picturing it. The interest attaching to it has caused one party of observers, headed by Professor David P. Todd and Mr. Percival Lowell, whose work in previous eclipses is well known, to journey to far-distant Tripoli, in Northern Africa, at which place the duration of the eclipse will be only fifty-five seconds, but from which point it is generally conceded that the likelihood of clear skies and absence of clouds and vapor is much greater than anywhere else in the path. It is to be hoped that the weather conditions may be favorable over a large portion of the world on this occasion and that photography may be possible, unhindered by aught but its own limitations.

* * *

The Jefferson Physical Laboratory of Harvard College had lately a narrow escape from complete demolition by fire, a condenser in which experiments were being carried on having exploded and set fire to the room; prompt action, however, saved the building and valuable apparatus from destruction, though a good deal of damage was done.

* * *

Not so fortunate as was Harvard, we regret to note that the beautiful studio of Mr. J. C. Strauss in St. Louis was completely destroyed by fire on January 31st last. It will be remembered by all photographers that the Strauss Studio, built only in 1896, was noted as being one of the most completely furnished and equipped homes of photographic art to be found in this country, and was the result of the best thought and effort of Mr. Strauss, who had made of it a veritable storehouse of art. The loss is estimated at $100,000, exclusive of negatives, which if destroyed will more than double this amount. We understand that the loss is partly covered by insurance. With the energy characteristic of Mr. Strauss, new quarters were obtained and furnishings ordered before the ruins of the burning studio were cold, and in the St. Louis morning paper of February 1st, describing the fire of the previous night, appears a three-column announcement advising his patrons of his new location and that Mr. Strauss is prepared to "personally make sittings." Mr. Strauss may count upon the sympathy of the fraternity in his loss and its best wishes in his re-establishment.

* * *

The studio of J. Wesley Swan, of Norway, Me., was also destroyed by fire late in January and with it a large number of valuable negatives of scenery on the Grand Trunk Railroad, of souvenir views of many large cities and towns and of the famous views about Poland Springs. Mr. Swan's loss is large and the insurance is said to be small.

Harvard and Yale Camera Clubs are forming plans for a photographic contest, to take place at an early day, which, from the interest manifested, bids fair to be of a high order of merit.

The Actien Gesellschaft für Anilin-Fabrikation of Berlin have done much to forward the interests of photography by their deep research and investigation into the matter of development and the production of their modern developing and controlling substances. A booklet, covering briefly the subject of their manufactures with descriptions and formulas, is about ready for distribution and may be had of our publishers on application.

AMERICAN PORTRAITURE.

" O, wad some power the giftie gie us,
To see oursels as others see us!
It wad frae monie a blunder free us,
And foolish notion."

The earnest worker in any profession is always benefitted by honest criticism, and the following extract, which lately appeared in the editorial columns of *Photography* (London, England), seems to be of especial interest at this time when so many of our best men in this country are preparing their exhibition subjects for the Convention at Milwaukee. If taken in the spirit which evidently prompted its writing, it will be of value, and should serve as a tonic to the lethargic constitution. It may be borne in mind, however, that the collection of prints referred to was probably not a wholly representative group of American professional photography.

" An exhibit from the United States at this year's salon provoked very general comment as to its strength in examples of portraiture. We ourselves drew attention to it at the time, and in a notice of one of the annuals recently we promised to recur to the subject. We do so now, and we trust that the few remarks we have to make will be taken to heart by our friends across the water. We write in a condition of admiration for some of its features, coupled with a certain amount of dissatisfaction.

" Our complaint against the pictorial portraiture exhibited from America is mainly based on our belief that, beautiful as much of the work is, and suggestive of character in a way which no 'usual thing' dare hope to approach, it is by no means in the truest sense of the word portraiture at all. All trace of likeness in many cases is gone.

" The desire for originality is allowed to override every other consideration, and, as a result, we have portraits of quite harmless individuals, which, if faithful, would justify their immediate consignment to the gallows. In others, the face and features are so subordinated to catchpenny tricks, if we may use the term without offence, that the catalogue is the only guide to the sex of the person depicted. We do not wish to be captious, but a portrait, we cannot help feeling, should also give us some slight suggestion of the age of its subject, possibly in some cases even a hint as to the color or complexion. We have had friends treated by the new school whose portraits—we do not exaggerate—were barely recognizable.

" As long as these are entitled merely 'a portrait, 'a citizen of the U. S,' or in some similar manner, we take no exception, and frankly admire them. We take them to be not portraits of the particular model before the camera, but, rather, speaking likenesses of persons whom Nature might produce in one of her capricious moods after a careful study of the photographs.

"We firmly believe that, unless the photographers in America, to whose work we are referring, pay more attention to vraisemblance than they have been doing, the school itself will speedily become extinct. This result we should regard as a calamity.

"The basis of portraiture must be truth, and when truth has been sacrificed to an utterly false suggestion of other things, or what purports to be such, a work has no real lasting power whatever. We should like to see what the American workers, to whom we have been referring, could do after having studied the work of such men on this side as Crooke and Barnett. The class to which these latter belong seems quite unrepresented in the States, the gap between the extremely modern school and the ordinary photographer being a big one and almost, if not quite, unoccupied.

"We hope our object in making these remarks will not be misconstrued by more than a few amongst those to whom they are addressed. The slightest attempt at anything beyond fulsome adulation seems to rouse the bitterest feelings in the minds of some people, who regard criticism as a personal attack. We do not think, though, that this holds good of very many of the sincere workers; in fact, the capacity for absorbing and profiting by the opinions of others is seldom absent from the true artist. It is your charlatan and trickster, who must always be taken at his own valuation, and whose reply to a candid critic takes the form of virulent and shrieking abuse, and we hope that few of this character are to be found in the ranks of those whose brilliant and original work we have been considering."

"DO IT NOW."

PICK out the class you wish to exhibit in and make your exhibit for the banner Convention of the Photographers' Association of America. This is our twentieth anniversary. Let us make it the best anniversary we have known. Never has there been greater promise of good things than now. We have the best facilities to show our pictures that can be devised. An art gallery, constructed with top light, where each and every exhibitor has an equal showing, and room enough for all; for the manufacturer and dealer we have ample floor space, and so located that none can pass him by, and ample space to show all his wares. Come and see the latest and best devices to help you make artistic money-making pictures.

We have a separate meeting room, free from the noise and confusion of conflicting business, where we can transact our business and listen to talks by specialists and art critics, who will give you practical illustrated talks on art lines as applicable to photography. And then we are invited to visit the Layton Art Gallery and enjoy its rare treasures and see the beauties of the world famous collection, under the able direction of the Curator, E. C. Eldridge, who will give a talk on the paintings displayed. We are also to have the triumph of the Century Color Photography practically demonstrated by the International Color Photo Company. These, and many more, are the attractions we offer. Come, and we will do you good.

J. Geo. Nussbaumer,
Secretary.

THE MILWAUKEE EXHIBIT.

IT would seem especially fitting that the Photographers' Association of America, the official spokesman of the profession, should uphold the dignity of photography. That portrait photography is rapidly advancing is well known. Its artistic capabilities have never been so well understood and acknowledged as they are at the present time. It has been a matter of regret to many that the average of the work exhibited yearly at our Conventions is not of as high a standard as we should expect to see when we consider the high average skill of the American photographer. It may or it may not be due to the policy of scattering medals broadcast; of permitting one standard of excellence in one locality and another standard in another locality. If a National Association means anything, it means a common meeting-ground, where all must compete on an even footing—a manifest impossibility when geographically divided. The most important issue, however, is: Shall the Association stand for all that is best and most elevating? It can have no lasting influence otherwise. Its yearly exhibitions should be and must be a representation of the progress of the year. It should be able to say to its members: Here are the practical ideals of photography. You must come to this fountain-head if you want the true knowledge. To turn from generalities to something specific, let me say, that in providing for a hanging committee to pass upon exhibits, the Executive Board have added mightily to the dignity and prestige of the National Association. Who can gainsay the added interest of such an exhibit to the visitor, and the greater opportunities it offers for study. It is unfortunate that much of the talk and discussions in relation to the "new" and the "old" schools, and the sneering allusions to "freak photography," have made it appear that many of our best workers are opposed to the artistic advancement of portraiture—a most erroneous impression. Possibly some of the flings at "freaks" have been inconsiderate; certainly they have been justified by some of the "attempts" of some of the would-be reformers. It is the fool friends (as usual) of the new movement who have made all the disturbance. Some very able lectures or "talks" have been arranged for that will be prepared for the especial purpose of throwing light on that much-abused question: How to apply art principles to photography. Never has the Association had so commodious and convenient a building for its purpose as the Exposition Building at Milwaukee. It contains a series of art galleries, with top light, in which the exhibits will be hung. Pictures will be judged by daylight, a fact that exhibitors will do well to bear in mind. It is the earnest desire of the Executive Board to have the National Association the exponent of all that is best in photography. We appeal to all who are in sympathy with us for your exhibits and your presence.

GEO. B. SPERRY,
First Vice-President Photographers' Association of America.

All copy for April issue must be in our hands by March 15th at latest.

NOTES FROM ENGLAND.

By F. C. Lambert.

Ferguson's Copper Toning Process for Slides and Bromides.

THE process is the fruitful outcome of a series of experiments which Mr. W. B. Ferguson, Q. C. M. A., commenced about the year 1895. The author, in his communication to the Royal Photographic Society (January 9th), very properly quoted, not only his success, but also some of his failures, so that other workers following in parallel paths might thereby be spared fruitless experiments. Starting with the foundation that in the ordinary uranium intensifier (most probably) we have the finely divided metallic silver (the image on the plate), reducing the uranium ferricyanide to the ferrocyanide state, by analogy we might reasonably expect that a similar thing would happen in the kindred metal, copper. Now, if a solution of a copper salt (say copper sulphate) is mixed with a solution of potassium ferricyanide, the double decomposition yields us a precipitate of copper ferricyanide and potassium sulphate remaining in solution. Thus, $3\ CuSO_4 + 5\ H_2O + 2\ K_3Fe\ Cy_6 =$ etc., show us that we require 748.45 parts of copper sulphate to react with 658 parts of potassium ferricyanide. For practical purposes, we may take 75 parts of the first salt and 66 of the second. The resulting green-gray copper ferricyanide is by no means a stable compound, and, moreover, is not easy to collect by filtration. However, by washing and decantation a considerable part of the undesirable potassium sulphate in solution can be removed. And now comes the point of supreme importance, viz., the solvent.

Ammonia is a solvent, but, on trial, had to be rejected, as not only the paper, but the gelatine, also, is injuriously affected by the resulting ammonio-copper compounds formed.

Ammonium carbonate is a solvent, but is not suitable (for toning purposes), as it not only gives a stain, but changes the density of the image. It may, however, be used as a negative intensifier when the change of color and density may be advantageous.

Potassium carbonate is similar to the last-named salt, but gives less stain, and one which may be removed, more or less, by rubbing with a tuft of wetted cotton wool. But it should be borne in mind that alkaline ferricyanides in general act (injuriously) upon paper.

Potassium oxalate is a solvent markedly ahead of those previously mentioned. Prints toned by its agency in 1897 were shown, and seemed to have undergone no appreciable change. For its use, however, the bromide print must be quite free from hypo. They should satisfactorily pass the permanganate test for hypo. The toning bath is prepared as follows: Ten per cent. solutions of potassium oxalate, potassium ferricyanide and copper sulphate are separately prepared. Of the oxalate, take 4 parts; to this add 1 part of the copper solution; shake well, and then add 1 part of the ferricyanide. At first the bath is quite clear, but very quickly various precipitates begin to fall. These probably are neutral oxalate of copper, a double oxalate of copper and potassium, and, in the case of tap water containing chalk or lime, calcium oxalate also.

One great drawback to this bath is the time taken to produce the warmer tones. Other solvents were sought, tried and abandoned. Among them were alkaline acetates, phosphates, tartarates, etc., until, finally, potassium citrate was hit upon, and has proved to be by far the best and eminently satisfactory. For working the bath we first prepare 10 per cent. solutions of potassium citrate (neutral), copper sulphate, and potassium ferricyanide, distilled water being desirable, but not essential. Then take as follows :

Potassium citrate, neutral	(10 per cent. solution),	250 cubic centimeters, say, 6¼ ounces.
Copper sulphate..........	(10 per cent. solution),	35 cubic centimeters, say, 7 drams.
Potassium ferricyanide...	(10 per cent. solution),	30 cubic centimeters, say, 6 drams.

Add the sulphate to the citrate, mix, then add the ferricyanide.

The black image of the slide or bromide print changes gradually to warm black, brown, sepia, and on to red chalk. The series of changes, at normal temperature, will take not more than five minutes. After toning, slight washing is necessary.

Ammonium citrate may be used in place of the potassium citrate, but it is not so good, as it tends to give a general stain.

The citrates are preferable to the tartarates, as the latter tend to precipitate calcium tartarate, while calcium citrate is not precipitated until the solution is boiled.

This copper toning process deserves the very serious attention of all who make slides or bromide prints. The range of color obtainable is really quite remarkable.

Professor C. H. Bothamley on some of the Newer Developers.

Mr. Bothamley, who has given considerable and special attention to many of the newer developers, recently communicated to the Camera Club some of the results of his experiments and observations. The communication was of some length, and in parts a little beyond the depth of most photographers. We therefore content ourselves with abstracting some of the more salient points, and refer our readers to the verbatim report, which in due course will appear in the club journal.

First, comparing diamido resorcin with its first cousin, diamido phenol, or, more familiarly, amidol. They keep with the ordinary preservatives, *e. g.*, sulphite and metabisulphite, for about the same time in practically an active state. They both give a developer when mixed with sulphite only, *i. e.*, without alkali, but with this difference, viz., amidol needs a 3 per cent. solution of sulphite, while the resorcin works with a ½ per cent.

Next, comparing hydramine with its near relative, hydrokinone or quinol, we find that hydramine, when dissolved in water, without other addition, yields a developing solution, but for practical purposes the addition of an alkali is highly desirable. The one to be especially recommended is caustic lithia. The following is a good practical formula:

Soda sulphite	6 parts.
Hydramine	5 "
Caustic lithia (lithium oxide)	3 "
Water	1,000 "

The addition of, say half a grain of potassium bromide per ounce of developer gives increase of contrast. Without bromide, fog is rather apt to result. For bromide paper the above solution should be diluted with about any equal quantity of water.

Thirdly, we have the two adurols, viz., Adurol Hauff, or chlorohydrokinone, and Adurol Schering, or bromohydrokinone. We find that while the ordinary hydrokinone is very sensitive to change of temperature, and, in fact, refuses to develop at all when very cold, that this is not nearly so much the case with the adurols. Again, they are not so markedly sensitive to the addition of small quantities of bromide. Then, again, the adurols have the advantage of keeping for a considerable time in solutions of convenient strength. Thus the adurols both (but especially the "bromo" form) are well worthy of the attention of photographers.

The lecturer pointed out how these newer developers had facilitated the use of bromide paper, and showed a series of bromide prints with these newer reagents. It should also be added that, whereas, with hydrokinone we require caustic potash or caustic soda, but with the adurols we can dispense with the caustic alkali in favor of the less powerful alkaline salts—a point of considerable comfort to the skin of one's fingers.

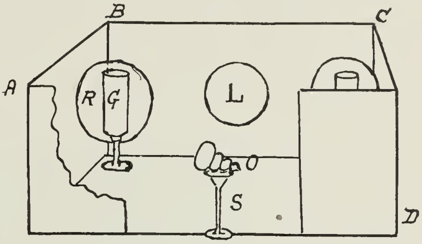
SOME RECENT ADVANCES IN X-RAY WORK.

Mr. William Webster finds that fog on the negative is largely due to "brush discharge" from the tube. If the two ends and the exhaustion projection are all encased in rubber tubing, this "brush discharge" is very considerably reduced, if not quite eliminated. If the bones of a living subject look transparent on the viewing screen, then a photograph can be obtained in a fraction of a second, but the best results are by no means always obtained under those conditions. When muscles are in a state of great tension they are far better seen than when in a state of repose or relaxation.

Under certain conditions of the tube a sheet of steel ⅜ of an inch thick can be penetrated by the rays. The condition can largely be controlled by heating the tube (by means of a spirit lamp) in the region behind and round the cathode. Mr. Webster showed a case where a virulent attack of "lupus" had been practically cured. The face of the sufferer was shielded by a sheet lead mask, with opening to permit the rays to fall upon the diseased parts (about the nostrils and face). Another authentic case was quoted, where a patch of hair had been successfully (and painlessly) removed from the back of a child. Anæmic subjects are said to be more transparent than those whose blood is normal.

An Apparatus for Showing Solid Objects on the Lantern Screen.

Mr. Webster showed the first model, which worked so satisfactorily that it seems quite worth while giving such description as will enable any handy man to construct something of the kind for himself. The accompanying sketch shows us the view as we see the contrivance from the back. *A*, *B*, *C*, *D*, shows us a box (the lid exists, but is removed), with an opening in the back. In the middle of the front side is mounted the projection lens *L*, and exactly opposite is the object *O* to be exhibited, as, for example, a shell, leaf, flower, etc. This may or may not be supported on a small blackened stand *S*. Now, to light this object we place in each of the two corners *B C* an incandescent gas burner *G*, and behind each burner a concave mirror or reflector *R* The interior of the box is blackened, and the lamps are so placed that, while the object *O* is well lighted by them, yet none of their direct light falls upon the lens. It need hardly be said that the object may be a map, plan, diagram, photograph, etc. The use of this apparatus for lecture purposes need not be pointed out.



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MODERN INTENSIFIERS FOR GELATINO-BROMIDE DRY PLATES AND THEIR BLACKENING EFFECT.

By J. M. Eder.

LATTERLY another intensifier, introduced by the Actien-Gesellschaft für Anilin-Fabrikation, of Berlin, under the name of Agfa-Intensifier, has become known. The method worked out by Dr. Andresen, of Berlin, and his assistant, Dr. Leupold, is based upon the employment of double salts of sulpho-cyanide of mercury. The intensifying fluid is brought into commerce as a colorless concentrated solution, which is to be diluted before use with nine times its volume of water. The gelatino-bromide plates gradually become more dense in this solution, and are by its prolonged influence strongly blackened with a gray-black color, more so than with bromide of mercury and sulphite of soda. With Agfa-Intensifier the separate blackening, which is necessary with the ordinary mercury intensifier, is dispensed with. By this means the manipulation becomes not only more simple, but the effect of intensification can more easily be controlled than is possible with separate operations of blackening. The Agfa-Intensifier is excellent.

(Here follow some comparisons with other intensifiers.)

From these observations it follows that the old method of intensification by means of chloride of mercury and bromide of potassium and subsequent blackening with sulphite of soda is sufficient in most cases, and is still to be recommended, that, however, Agfa-Intensifier, on account of its simplicity and the possibility of getting greater blackening, appears superior, and is to be recorded as a real progress. —*Translated from Photographische Correspondenz, Wien, January, 1900.*

PRINTING WITH NITROPRUSSIDE SALTS.

By E. Valenta.

A Mr. R. B. WEST, in New Haven, Conn., has a new printing process patented, in which he replaces the red prussiate of potassium, used in the preparation of ferrocyanide paper, by ammonia-, potassium- or soda-nitroprusside, and it is said that he obtains a paper giving prints similar to platinum or copper prints.

He coats the plain paper with the following solution :

Ammonium nitroprusside	25 grams.
Iron ammonio-citrate	30 “
Water	100 cubic centimeters.

To modify the tone of the picture, small quantities of other citrate salts may be added—for instance, citrate of magnesia for copper-print black tones or citrate of zinc for brown tones. But these additions are not necessarily required.

Instead of ammonium nitroprusside, sodium nitroprusside or potassium nitroprusside may be taken, but they are much less sensitive. Paper prepared with the above solution will color brown or black if exposed to light. The prints are washed for two or three minutes in water and are then immersed for about five minutes in a bath of

Acetate of lead	2 grams,
Water	100 cubic centimeters,

and are then washed again. This will make them more durable.

To convince myself of the aforesaid, I prepared paper with the application of sodium nitroprussid and of brown as well as green citrate of iron and ammonia.

The results of these experiments were as follows :

The printing paper, prepared after the above-described process, with sodium nitroprusside and brown ammonia citrate of iron, shows a yellow-brown colored coating. This coat possesses about the thirtieth part of sensitiveness of albumen paper. The paper prints, therefore, very slowly. At the exposed part the prints have a deep brown color. When put into water, the preparation dissolves quickly in the unexposed parts and a brownish green picture is obtained, over whose whites a thin brownish hue seems to spread. If the print is dried, a dark green-brown picture is visible.

If these prints, after a short washing, are laid in a 2 per cent. solution of acetate of lead, the picture will assume a dark violet color, which becomes still deeper, if left for a prolonged time in the solution. When washed and dried, the picture has the color of a gallic iron picture.

If the picture, which was toned in the acetate of lead solution, is put into very dilute muriatic acid, it will appear in a handsome blue color. Such a picture has, after washing and drying, the exact appearance of a dark blue print picture.

If citrate of magnesia is added to the preparation, dark pictures are obtained, which, after toning, resemble greatly the gallic iron pictures.

Much more sensitive is paper with a preparation of sodium nitroprusside and green citrate of iron and ammonia. With such a paper

Photograph by RAY, Asheville, N. C.

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prints are obtained, that will furnish pictures of a still more decided blue than those with the first preparation.

But in no case have I succeeded in obtaining prints which would resemble platinum or copper prints, even only approximately.

Regarding now the chemical actions, which take place in this printing process during exposure and following treatment of the picture: In the first place, at the exposure of the nitroprusside paper a reduction of the ferri salt to ferro salt will take place, analogous to that in the ferroprussiate process, which then will act upon the nitroprussid salt in such a way, that from it ferro-nitroprussid is formed, which appears as a chocolate-brown powder, insoluble in water. With the nitroprusside paper, pure brown tones should, therefore, be obtained, provided no other decompositions take place; but this is by no means the case, as the paper, as mentioned above, gives brown-green pictures after the short washing, which become dark violet by treatment with acetate of lead.

As already proven by Roussin years ago, under the influence of light upon mixtures of sodium nitroprusside and chloride of iron, a decomposition takes place with a separation of Berlin blue.

Eder, who made a closer study of this reaction, has proven, that sodium nitroprusside is decomposed by itself in aqueous solution, as is shown by the appearance of prussic acid and separation of Berlin blue, and that the presence of ferric chloride accelerates by twenty times this reaction.

As I have convinced myself by experiments, mixtures of sodium nitroprusside and citrate of iron and ammonia behave in a similar way, and the chocolate-brown ferri nitroprussid is also decomposed with separation of Berlin blue in presence of moisture.

This separation of Berlin blue from mixtures of citrate of iron and ammonia and sodium nitroprusside is greater by using the green salt, than that by use of the brown citrate of iron and ammonia; therefore the greater light-sensitiveness and the bluer pictures are obtained by employing mixtures of green salt for the production of the paper preparation.

The picture consists, therefore, in the nitroprussid-ferro printing process in its principal body of Berlin blue not yet decomposed and a mixture of ferro-nitroprusside.

To determine the influence of the acetate of lead toning-bath upon this picture, I treated a sample of ferro-nitroprusside (produced by precipitating a sodium nitroprussid solution with a ferrous sulphate solution and washing of the precipitate with water) with acetate of lead solutions of various concentration. It showed that the ferro-nitroprusside is pretty easily soluble in concentrated hot solutions of acetate of lead, and even in diluted solutions will dissolve sufficiently to explain the change of color, which the prints suffer by a treatment with such solutions. In treating the picture with diluted acetate of lead solution a part of the ferro-nitroprusside is also dissolved, and the result is (as acetate of lead changes Berlin blue to violet) the above-described character similar to the ferro-gallic pictures.

Translated by
HENRY DIETRICH.

"PYRO" AS A DEVELOPER IN COLD WATER.*

BE it by a kind of instinct or an intuitive sense of the fitness of things—whatever the cause, indeed—the professional photographer generally blunders into or stumbles upon the right thing at the right time, when that time arrives for a move forward. We say stumbles upon advisedly, for it must be admitted that few of those whose business in life is the utilization of photography for portraiture or landscape give much time to experimenting, and, of those few, a still smaller proportion to exact experimenting; yet, as we say, they generally, to use a favorite scientific argot, seize the psychological moment when it arrives. The history of practical photography shows how the once despised amateur did the laborious work of the laboratory, and the professional walked in and took possession, and very often without the usual formula of acknowledging thanks.

Let us hark back to facts within the memory of many of our readers. Time was when every one used iodized collodion and pyro developer. Within a brief period it was abandoned, and "bromo-iodized" collodion took its place, to be quickly followed by the abandonment of pyro for iron as the main developer. Equally sudden, when once started, was the change from the combined toning and fixing to the alkaline toning with a separate bath. At this time almost every one used Saxe paper. A well-known contributor once told us that when, after trying every kind of paper in the market, and finding Rives infinitely superior to any, he, when placing his orders, was simply laughed at by his friends, the makers, who said, "Nobody ever uses Rives." Yet who ever even hears of Saxe nowadays?

Coming to a later period, when emulsion photography and alkaline developer was devised, at a time when every portrait photographer and most landscape photographers in the land may be said to have used wet collodion, the same mysterious instinct gave warning that the moment had arrived, and with great dispatch baths were cast aside, and bottles of limpid collodion allowed to dry up into masses of horn. Oxalate of iron became the chosen developer; yet, before the novelty of the radical change of procedure from wet to dry had worn off, a wave of change passed over the land. Iron developers were abandoned, and in virtually every darkroom the developer was "pyro," and it has remained the favorite ever since; at any rate, up to a very recent date. Excursions in the region of metol have been made, but few so far have taken to its general use, and some have announced their abandonment of it. It is not our purpose at the present time to say which is the developing agent we consider deserves the preference; we merely tabulate a few facts, and we abstain from self-laudation for the position in the van of progress that this journal has taken, as evidenced in the early days of gelatino-bromide.

Let us look at another aspect governing the choice of a developer, one, strange to say, that, all-important though it is, has held practically no position in the discussions upon the subject; we allude to the cost of the various developing agents. We are not aware that, apart from the question of using the same lot of developer for a succession of plates, any one has claimed that, weight for weight per ounce of water, any of the more modern developers will bring up the negative to sufficient density sooner than pyro; or, in other words, that an ounce of any one of them will make more quarts of developer of suitable working strength than would pyro.

That being the case, let us look at the price. What developing material, except pyro and hydroquinone, can be bought for a shilling an ounce, at which price these two are cheerfully sold? That is a dominant consideration, and exercises, perhaps unfelt, a dominant influence in keeping pyro at the top.

Hydroquinone at one time threatened to oust it, but, except among amateurs, the progress it once made has been arrested, and it has fallen back again in repute. The chief reason for its preference by amateurs is the fact that it does not stain the fingers anything like so readily as pyro, and this is an important consideration to those not professionally engaged in photography. The latter, as a rule, have always ignored any such fad as caring for stains; witness the "hands" we used to see in the "good old wet-collodion days." But is the use of pyro necessarily attended with stained fingers? We say no. We are about to give our readers a valuable tip: When dry fingers are dipped into any liquid they quickly absorb, as it were, a portion of it, and it is very difficult to entirely free them from that absorbed liquid. So with pyro. But the bane suggests its own antidote. Let the fingers before touching the developing solution be saturated with water by dipping them in it, and it will be found that, if every now and then they are again wetted with water while occasionally fingering the plate in the developing solution, the stain will be reduced to a negligible minimum.

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* From *The British Journal of Photography.*

We will conclude by referring to one property of pyro often incidentally alluded to, but not yet, to our knowledge, exactly estimated—its amenability to the influence of temperature changes. We have heard from a contributor, who has a series of experiments on this point in progress, and he estimates, subject to correction after further experiments, from indications already tabulated, that, after 65 degrees Fahr., a change of temperature in the direction of reduction needs an increase of 5 per cent. of the time needed at 60 degrees for each single degree of temperature reduction! Our own experiments tend to confirm his estimate. Here is the key to a vast number of failures, of "insufficient exposures," of "weak exposures," and so forth. The importance of this subject has not hitherto been grasped; but, contenting ourselves now with strongly calling attention to it, we must bring our article to a close, with the promise that any more exact data obtained shall be brought forward in these pages as soon as available.

GLEANINGS FROM GERMANY.

By Henry Dietrich.

To take the odor from kerosene or benzine, the following is recommended: Mix 1.75 liter of water and 0.25 liter of sulphuric acid. Let it cool off and add 30 grams permanganate of potash. Mix the whole with 4.5 liters benzine. This mixture is left standing for twenty-four hours, shaking it occasionally. The benzine is then drawn off and is shaken well with a solution of 7½ grams of permanganate of potash and 15 grams soda in 1 liter of water. Benzine obtained in this way is colorless, has no smell and requires no further treatment.

White Spots in Bromide of Silver Prints.—It is a well-known defect of bromide of silver pictures, that during development white spots will make their appearance to a greater or lesser degree. The cause of this remained unexplained for a long time, but Dr. L. Bakeland has recently made investigations by imbedding the paper in paraffine and making fine cuts of the same with a microtome which he has subjected to microscopic examination and from which he concludes that the cause is not to be looked for in air bubbles or fat, but in small particles of metal, which were found in the center of these spots. This metal proved to be copper. The process of the spot formation may be electrolytic, the copper acting as an electro-negative substance introducing an electrolytic process into the still moist emulsion which leads to the partial replacement of copper by separated silver and the formation of bromide of copper. Experiments have proven that such spots will actually result, and it is very probable that the plain paper receives the small copper particles from the bronze calendars, through which it has to pass. This shows that copper contaminations may be just as injurious to plain paper as iron filings.

Eruptions on the Skin, Caused by Aurantia Collodion.—It is a known fact that aurantia collodion, when it comes in contact with the skin, may cause eruptions and soreness. But not everyone is sensitive to this tendency nor are all affected by it. Even the wearing of materials dyed with aurantia may affect a person. The operator should, therefore, be careful when working with aurantia collodion.

Underexposed Negatives to be Used as Decorations.—An underexposed plate that is not suitable for intensification may be changed by a mercury bath to a fine white, blue or red glass-diapositive. The plate, which should be well washed after fixing, is put into a 2 per cent. mercury bath and left there until it has become thoroughly white. It is then taken out, well washed and put into an aniline-color bath, if to be colored. After the plate is thoroughly dry, put upon the film a piece of black paper, velvet or cloth and a cover glass. This is fastened on the edges with gum paper.

Calcium Carbide.—Mr. Paul Wolff has succeeded in discovering a process by which the production of calcium carbide is essentially facilitated. To the mixture of lime and carbon powdered aluminium is added, and this is ignited. This introduces the reaction, the aluminium unites with the oxygen of the lime, and in this process such a high temperature is developed that the lime melting is reduced and the calcium unites with the carbon.

Sensitizing with Cyanine.—Red-sensitive plates are still preferably produced with cyanine solutions, although the working of the same has its difficulties. According to recent investigations, these difficulties have their origin only in the extremely great sensitiveness of the cyanine to every kind of acid (even the carbonic acid of the atmosphere). Considering this circumstance, the cyanine process does not appear any more difficult than other orthochromatic processes. To counteract the action of acids certain additions to the cyanine bath like aniline, codeïn, and similar substances, have proven effective, being better than the ordinarily applied ammonia, the latter producing fog very easily. The elimination of dampness from the air in the drying closet is important, for which purpose a drying medium of calcium chloride is suitable. The dish with the drying medium should be above the plates to be dried. The sensitizing solution is composed as follows :

Alcoholic cyanine solution (1:1000)	6 cubic centimeters.
Alcholic solution of codeïn (1:1000)	34 "
Pure aniline	5 drops,
Distilled water	960 cubic centimeters.

The cyanine, as well as the codeïn, must be dissolved in absolute alcohol and fresh solutions should always be used.

The bathing time of the plates is two minutes, whereupon they are rinsed for a minute with a mixture of

Alcohol	34 cubic centimeters.
Water	966 "

Before drying, the glass side should be wiped off carefully with filter paper. The plates so obtained are clear and brilliant if the emulsion was not defective.

To Produce a Durable Fish Glue Solution.—Herr Gaedicke recommends fish glue with carbolic acid. In this way it will keep for a long time and is very convenient. A suitable formula for the production of this solution is as follows:

Albumen	7 parts.
Fish glue	7 "
Five per cent. solution of carbolic acid	1 part.
Distilled water	14 parts.

The albumen is beaten to foam and is left to decant. The solution may be left standing for several weeks to settle and clear thoroughly. For use, four volumes of this solution are mixed with one volume of a 10 per cent. bichromate of ammonia solution.

Increasing the Sensitiveness of Bromide Collodion Plates.—The greatest light sensitiveness is possessed, as is generally known, by the ripened bromide of silver gelatine plate. As collodion emulsions generally ripen very little, their sensitiveness is considerably less. But on account of their physical properties, it is very difficult to submit a collodion emulsion to a further ripening process as long as the emulsion by itself is to be considered. But it can be accomplished if the emulsion is poured upon a glass plate and submitted to a further treatment by bathing in the following solution:

Gelatine	120 grams.
Bromide of potassium	120 "
Nitrate of ammonia	120 to 180 "
Carbonate of ammonia	180 "
Water	950 cubic centimeters.

Let the gelatine swell for four hours in cold water, dissolve the bromide of potassium and nitrate of ammonia in 600 cubic centimeters of water by application of heat and finally add the gelatine, liberated from water by squeezing. After dissolving add the carbonate of ammonia, shake well and add the rest of the water, until the whole has reached a volume of 1,200 cubic centimeters. For use, take one part of this solution and 10 parts of water. The bromide of silver collodion plates are put in this solution, whose temperature is from 45 to 80 degrees Cent. The higher the temperature the higher the sensitiveness.

TEACHINGS OF DAGUERREOTYPE.

(*Continued from February* Bulletin.)

THEY then prove this by examples taken from their actual experiments. In the first case, if it takes, say, five minutes before any chemical decomposition of the sensitive surface is effected, and a plate has one-half protected from light and the other half exposed for five minutes, although both parts show no visible action, the exposed half has five minutes' start, and if the whole plate be now exposed to uniform insolation, the half previously exposed will act quite differently from the half which remained in the dark.

The exposed half begins darkening at once, gaining intensity every minute, while the unexposed half must remain for five minutes before any darkening action can take place.

The second case is similar. An image commenced by lights of various degrees of intensity is developed by subsequent uniform exposure in depths of coloring proportional to the original varying intensities. The same thing happens if "the sensibility of the plate is altered by the first exposure to light, and in such a manner that the greater luminous intensity corresponds to the greatest sensibility. If the varying amounts of sensibility which the surface of the plate has reached by the first exposure could be represented by depths of coloring, the various shades would represent the picture itself. With a subsequent uniform insolation, the chemical action must therefore proceed proportionately to the various amounts of light in the original picture, and, if the chemical action is made visible by a change of color, an actual picture must be produced."

Dr. Vogel has explained this phenomenon, in a very simple manner, by the supposition that during the preliminary exposure a subsalt is formed which changes the absorptive properties of the surface and renders it sensitive to red and yellow rays.

Iodized silver plates show this phenomenon quite distinctly with deep red, yellow, or cathedral green glasses. For instance, a plate had two exposures under a graduated screen ; first, a short one showing no visible image ; the second, printed out to show up to 3 or 4 of the scale of 7 gradations. After some twenty minutes' exposure under the red glass, the first exposure showed a clear printed-out image up to 3 or 4 of the scale, similar to that produced by the second printed-out exposure, while this last image was fully printed out and extended under the influence of the red glass up to 7, or the full extent of the scale, the original numbers 0 to 3 being strongly bronzed, just as they would have been by a longer exposure to white light. They had, apparently, been iodized.

In the same way, an iodized silver plate exposed in white light under a scale of fifteen colored glasses, and only showing visible action under the blue and lavender glasses, when further exposed under a red glass, showed action under all the blues and violets and bluish greens, but not under the reds, yellows, and yellowish greens at all, though this developing action was going on under a red glass.

Yellow and green glasses gave much the same effect. Violet glasses, either reddish or bluish in tint, did not answer at all—nor did blue glasses—the images already formed seemed to grow weaker instead of stronger, and they were removed entirely in fixing, leaving no trace.

The developing action of the red, orange, yellow and green glasses may also be shown upon silver surfaces which have been treated with iodine, so as to show Talbot's rings, and, although there are no very marked changes in the chromatic relations of the different series of rings, there are changes which might repay further investigation. I have brought with me a series of plates illustrating the changes produced in these rings by exposure to white light, as well as to colored light passing through glasses of various colors.

Under a red glass there is little perceptible change in the inner series of rings, but in the outer rings the blue, violet, purple, and red are almost absent, and their places taken by shades of mauve and dull green. The rings that were entirely unexposed show no change.

Under the orange glass the effect of the glass on the series of exposed rings is very similar to that produced by the red glass, but there is also a considerable developing action shown on the unexposed rings, and the scale of coloring is quite different to that shown by the exposure to white light. In the latter the outer rings are marked by a deep pansy-like bluish purple fringed with green, while in the outer rings exposed under orange glass we have a fine, pure blue, fringed with purple, and shading out into brown.

The action of the yellow glass is similar to the orange; but, as the original exposure under white light was not carried to the green or solarization stage, the contrast between that set of rings and those exposed under the yellow glass is not so marked, though there is a very distinct difference

The effect of the cathedral green glass is very marked, especially in the outer rings, which show grades of pale mauve, blue, violet and a rich bright green in the part originally exposed to white light, while the unexposed rings, though showing a considerable extension of action under the glass, are very similar to those exposed in white light, but show less red.

The blue glass shows a very marked effect, quite different to the glasses noted above. The exposed and unexposed series show practically the same effect under the blue glass, while the scale of coloring is markedly bluer, the outer rings being shown by shades of lavender or mauve working into blue-violet, and then into shades of rich blue-green, followed by a yellow-green, and then pink.

Efforts have, I believe, constantly been made to utilize this principle of after-exposure under a red glass in practical photographic work, especially in taking astronomical photographs, but the trouble is that it works best with rather insensitive plates or papers, and so there is not much saving of time. However, it might be of use in cases where large numbers of prints had to be produced from a single negative, and it would be an object to shorten the exposure required under the negative. The point to observe is that the first exposure must be sufficient to start the action in the under-exposed parts, and that the sensitive surface must be almost insensitive to the rays coming through the colored glass. The ordinary P. O. P. paper shows the effect well.

The fact fully brought out by Bunsen and Roscoe's researches on photo-chemical induction, but first observed by Draper, that the action of light upon a mixture of chlorine and hydrogen does not take place instantaneously, but that a considerable continuation of the exposure is necessary before an action occurs, has, I think, an important bearing upon the much-vexed question of the physical or chemical nature of the latent developable image on photographic plates.

Bunsen and Roscoe found that, if the chemical rays emanating from a constant source of light be allowed to fall upon a mixture of chlorine and hydrogen which has stood for some time in the dark, no appreciable quantity of hydrochloric acid is formed during the first few moments. After some time has elapsed, a small action is observed, which very gradually increases, until, after a considerable space of time, a permanently constant maximum is obtained. The time which elapses from the first insolation until the first traces of the photo-chemical induction become visible, and until the maximum action is attained, is, according to circumstances, extremely different.

Bunsen and Roscoe also pointed out that in their experiments they had to do with the purest form of the phenomena which are classed under the name of catalysis, freed from all foreign disturbing causes.

These researches on the action of light upon a mixture of chlorine and hydrogen have been continued by Pringsheim (*Wied. Ann. Phys. u. Chem.*, N. S. 32, 1887), who found that photo-chemical induction is not dependent upon the color of the light, but only upon its chemical intensity; and it seems probable that the photo-chemical induction is based upon chemical processes connected with the formation of hydrochloric acid gas, and not upon any peculiarity in the action of light. He found also that the first visible action of light upon the gaseous mixture of hydrogen and chlorine consisted in an abruptly increasing and an equally abruptly decreasing of the volume of the gas, the amount of which was proportional to the intensity of the light producing the action. This sudden increase in the volume is brought about by a momentary dissociation of the molecules which takes place at the moment of the chemical change. Scarcely any hydrochloric acid is formed, but rather an intermediate substance. The slow formation of this acid only takes place when the mixture of gases is moist; dry gas is not sensitive except in strong light. The intermediate product which produces photo-chemical induction, and the assumption of which is completely explained by this phenomenon, arises probably from the decomposition of watery vapor. This last observation seems to have considerable importance, as Nernst has shown.

I do not know whether any series of experiments have yet been made on the basis of these researches of Bunsen, and Roscoe, and Pringsheim, with photographic plates. We know now that hydrogen is not a metal, as was at one time supposed, and, therefore, its relations with halogens might not be exactly comparable with those of silver and other metals forming light-sensitive compounds; but, from results I have obtained during the course of experiments with iodized silver plates, I believe that a carefully carried-out series of observations upon the action of light on plain silver surfaces, in combination with the halogens and mixtures of them, might yield very valuable information as to the mechanism of the latent developable image, and throw more light upon the composition of the products of reduction, which, though small in quantity, are in a form more easily amenable to chemical analysis than is the case with ordinary photographic plates prepared with collodion or gelatine.

Quite recently Dr. R. Luther has shown that, when silver is acted upon by small proportions of chlorine water added in stages, the oxidation potential, as shown by an electrometer, remained at first constant at 0.55 volt, but suddenly sprang to 1.45 volts as soon as half the silver had been combined with the chlorine corresponding to the sub-chloride Ag_2Cl. It then remained fairly constant at 1.45 volts until the whole of the silver had been converted into chloride. This action seems somewhat analogous to Pringsheim's observation of the sudden rise at the moment of chemical change between hydrogen and chlorine. Many of Bunsen and Roscoe's observations show similar sudden rises and gradual increase to a maximum.

It seems not unlikely, therefore, that for a certain time, which is variable, according to the nature of the sensitive surface and the intensity and character of the light, the action of light is physical or mechanical, and that the latent developable image is not formed till the moment when chemical decomposition begins and the stage of under-exposure is reached; a certain further period of action produces the stage of chemical decomposition, corresponding to normal exposure, and still further we reach the stages of the visible image, over-exposure and solarization, which in some cases appears to be equivalent to electrical polarization and reversal.

ACTION OF LIGHT UPON PURE SILVER IODIDE.

We now come to the question of the action of light upon a surface composed of pure silver iodide, such as may be obtained by completely converting the thin silver film of a silvered glass into iodide.

If we expose a piece of silvered glass to the fumes of iodine for about an hour and a half to two hours, till the silver coating is entirely converted into the anhydrous iodide, we obtain an almost transparent pale greenish yellow film. According to some writers, this film of pure iodide is absolutely insensitive to light, either visibly or by development. I have not found it so. Visible images may be obtained by exposure in daylight, or even in the camera.

As there is no active iodine absorbent present in the film, either free silver or its compounds or organic matter, the action of light on these plates would appear to be more of a physical or mechanical nature than chemical, though, as we shall see later on, there is a very strong probability that chemical actions play their part in a somewhat obscure way.

One of these plates was exposed in the camera for seventy-five minutes, upon a view of sky and houses. There was no distinct visible image, but mercury vapor brought out a faint outline of the tops of the houses against the sky, the sky being darker than the houses, etc. There were no details. The plate was left in the mercury box in the hope of bringing up more, but the image gradually disappeared, and eventually did so completely, leaving absolutely no trace. The same thing happened, though not so completely, on another plate exposed in the same way, but showing a distinct visible image after exposure in the camera, and also developed with mercury. A similar vanishing of a developed image was also noticed on one of the silvered glass plates, which was exposed for some days from the glass side. There was no visible image on that side, but there was an image on the unexposed face of the glass, which could be brought out by breathing. On developing the plate with acid iron and silver, and forcing it a little, traces of the image were distinctly visible from the glass side of the film; but, after the film dried, all traces of the image had disappeared from that side as well as from the front. From these two instances there seems to be some ground for believing that photographic images may be produced by purely molecular action.

On exposing another of these super-iodized plates for five minutes in the sun under a screen of fifteen colored glasses, I noticed that where the light acted through the blue, violet and bluish green glasses the film appeared more or less opaque and clouded, while the edges of the plate, which were freely exposed to the sun the whole time, were only very slightly darkened or different to the unexposed ground. On developing with mercury the vapor was deposited on all the affected spaces under the colored glasses, but not on the protected parts or the unaffected spaces under the red, yellow and green glasses, nor on the over-exposed and solarized parts outside. Development with acid iron and silver gave precisely similar results, as you will see from these two plates. (Plates shown.) The images in both cases are rather thin.

This peculiar turbidity or capacity of the fully iodized silver film when exposed to light was noticed by Schultz-Sellac (*Photo. Mitth.*, 1871, page 60; or *Photo News*, 1871, page 308). He says that the action of light is sometimes shown by the production of a series of colors in the film when viewed by transmitted light, by refraction of the light through the particles of iodide of silver. I have not noticed these variations of color.

He further says: "If different parts of a plate are exposed to the action of light for various periods, covering portions partially with an opaque shield, which is drawn away after certain fixed periods of time, it will be observed that the action is apparent only after the lapse of a certain time, and it suddenly increases with great rapidity. To start the action in the first instance, therefore, a certain amount of light is necessary." This, it seems to me, furnishes a practical corroboration of Bunsen and Roscoe's theory of photo-chemical induction, and may be compared also with Luther's recent observations, previously referred to.

According to Schultz-Sellac, the presence of a small quantity of free iodine is necessary to the occurrence of the mechanical change. By keeping some time in the air, or by treatment with iodine absorbents, the sensitiveness of the material to mechanical change is annulled, but again restored by further fumigation with iodine. In my own experience, I have not noticed any very marked difference of action between plates that have been left in the air before use or fresh ones still charged with iodine, though the latter are, I agree, more sensitive, *i. e.*, more quickly affected by light than the former. If the plate has, however, been exposed to light in contact with an iodine absorbent—silver, copper or tannin—then, although there is a decided darkening visible by transmitted light, the film does not become opaque.

If again, as suggested by Schultz-Sellac, one of these over-iodized plates is partly coated with collodion or varnish, then we notice a very marked difference between the images produced on the varnished and unvarnished parts. This is very clearly shown in the prints of a graduated scale I have here. On the unvarnished half we have a strong series of pale whitish yellow bands decreasing very distinctly in density, while on the varnished half, though exposed longer, the images of the bands, though visible, are all more or less phantoms. It must be noted, however, that the varnish is a strong iodine absorbent, which collodion might not be.

Schultz-Sellac found that somewhat similar effects could be produced with films of pure iodide of silver in collodion fumed with iodine. He attributes the changes of color which are observed to a mechanical change in the particles, and not a chemical change.

In a paper published last June in *Wiedemann's Annalen*, H. Scholl has very fully investigated the changes produced by the action of light on silver iodide and Daguerreotype plates. In the third section he gives the results of his inquiries into the cause of this peculiar turbidity. He first shows that, as we have already seen, if the film of pure silver iodide produced as described is covered over by a coating of varnish, collodion or some other suitable substance, the cloudiness is produced very much more slowly. This may be due either to the coating preventing the escape of iodine or the access of air. If any iodine is given off during exposure, we ought to be able to detect it by placing the iodized film in contact with a plain silvered glass surface. On doing this he found that there was some change on the silvered surface, but not more than could be observed by exposing the silver to a light of the same intensity, but not in presence of the silver iodide. There were no distinct interference colors, and he does not consider the experiment convincing.

I have tried this experiment several times in different ways, and find that the plain silver surface is very distinctly and even visibly affected by contact with the iodized plate during exposure, and certainly very much more so than if exposed by itself under the same circumstances. For instance, a slip of pure silver foil was exposed for fifteen minutes in the sun under one of these iodized silvered glass films, but separated from it by a cut-out screen of mica. The silver foil showed distinct images of the cut-out designs, which darkened still further when exposed to light, and were quite soluble in a solution of potassium iodide. The parts of the foil protected by the mica were quite unaffected. Similar results were obtained with polished copper and with paper soaked in tannin, the images in the latter case being brought out with weak aceto-nitrate of silver.

There is little doubt, therefore, that iodine was given off under the influence of light in presence of an iodine absorbent. It may be noted that, in all these cases, the parts of the iodized silvered glass that has been in contact with the iodine absorbent surfaces were transparent, while those in contact with the mica showed distinct cloudiness or opacity, though enclosed and protected from the air.

Scholl then argues that, if the clouding be due to loss of iodine during exposure, it ought to be less or disappear altogether if the plate is exposed in the vapor of iodine. He found, however, that, on the contrary, the plate clouded much more readily under exposure to light in the iodine vapor than it did in the air. The opacity, therefore, is not due to loss of iodine, and the action of the collodion or varnish in hindering it must be due to its preventing the access of air to the film. The change in the iodide must consequently depend upon the nature of the gases in which the plate lies during exposure.

[The occurrence of the clouding in the cases above noted, when the iodized films were exposed in contact with mica, may, I think, be explained on Scholl's theory by the iodine being first given off and then resensitizing the film, as if it had been exposed in the vapor of iodine.]

Experiment showed that hydrogen and nitrogen had absolutely no effect in producing the opacity. In oxygen, however, it was produced rather more quickly than in air, and it was evident that oxygen is the active agent in the change.

(*To be continued.*)

COLOR PICTURES BY REACTION, AFTER EXPOSURE, AND BY SUBSTITUTION.

By Professor R. Namias.

THE principal purpose of my experiments is to produce three-color photographs, by means of methods easily comprehensible and handy to every photographer without having recourse to any photo-mechanical process. It can be accomplished by the so-called gum print process; but this method is so difficult that it cannot be granted any great consideration.

The Blue Picture.—This is easily obtained with the ordinary cyanotype or iron blue-print process.

The Yellow Picture.—The problem, to obtain easily and rapidly a yellow picture in the photographic way, may be considered as solved. The process is based upon the fact, that during exposure of a mixture of a lead salt and of red prussiate of potassium, insoluble ferrocyanide of lead will form, which, by treating with the solution of a chromate or dichromate salt, will change into yellow chromate of lead. The salt mostly used for this purpose is acetate of lead. A great defect of this method is, that the required exposures are extremely long. But if to the mixture of red prussiate of potassium and lead salt about 5 per cent. of lactic acid are added, the exposure may be reduced to the third or fourth part of the original duration. The lactic acid, during exposure in presence of red prussiate of potassium, reduces the latter to yellow prussiate of potassium. It is best to apply paper, which has been prepared with a saturated solution of lactate of lead, to which was previously added about 10 per cent. of red prussiate of potassium. After exposure the paper is treated in the manner already mentioned, with a solution of chromate or dichromate salt, and a handsome yellow picture is thereby obtained. The paper is then coated with a mixture, which is used for the ordinary iron blue-print, and in this way a blue picture can be produced over the yellow picture, without injury to the latter. If the yellow picture is bathed in an ammonia solution, it will obtain a more or less orange-colored shade.

The Red Picture.—All experiments in this direction made by the writer have so far given no satisfactory results. Ferrocyanide of copper is red, but it does not possess the brilliant red shade which is essential for the total effect. Still, it is pretty well adapted for this purpose, particularly, if the reproduction possesses no brilliant red parts. But besides this, it has not been obtained yet in sufficient quantity by light action. Lactic acid proved to be the most suitable solvent. The copper salt is produced by dissolving precipitated carbonate of copper in a small excess of lactic acid. A solution containing 15 per cent. of the salt is mixed with a 10 per cent. solution of red prussiate of potassium, whereby a precipitate of ferricyanide of copper will form, whose proportionate insolubility forms the principal difficulty of the process, it being impossible to spread the light-sensitive mixture uniformly upon the paper, and, at the same time, rendering fixing somewhat difficult after exposure. The writer has not yet succeeded in finding a solvent for the ferricyanide of copper, which would have no injurious action upon the photo-chemical change. Ammonia does not answer the purpose. It is an interesting fact that the mixture of ferricyanide of copper and lactate of copper is very light-sensitive after coating the paper, and that it will become pinkish-red by exposure, which color changes to a deeper red by repeated washing with water. But even continued washing does not completely remove the ferricyanide of copper not influenced by light. The best fixing medium is a solution of ammonia carbonate, but even this affects the red picture somewhat by reducing the same.

The red picture in ferrocyanide of copper must always be produced after the blue picture, because the iron salts required for the latter would decompose the copper salt. But if, on the other hand, an alkali is applied in connection with the red picture, the blue picture will be decomposed, if not previously protected by a varnish coating.

Much better results are obtained if the paper, as already described, is sensitized with the mixture of a ferricyanide and a lead salt, and is bathed after exposure in a diluted solution of sulphate or acetate of copper, which was acidified with acetic acid. In this manner a picture is obtained, which consists of ferrocyanide of copper, and possesses a very handsome red color. Such red pictures, however, though they may find useful application in a good many cases, the color is not satisfactory for the three-color printing process.

The ferrocyanide of lead picture, as here described, will admit pictures of still other color shades by adding certain mixtures. If treated with solutions of uranium salt, pictures are obtained of darker red than those obtained from copper salts. With vanadic acid salts the picture becomes yellow, and with cobalt salts greenish. In general, it may be said that paper prepared with ferricyanide of lead and lactate is not only very sensitive to light, and inexpensive, but is also suitable for the production of pictures in different color shades by subsequent treatment. Any good quality of paper can be used in the process.

COLOR PICTURES BY SUBSTITUTING FERROCYANIDE SALTS FOR METALLIC SILVER.

A new method has been worked out by the writer, according to which the silver positive picture upon glass or paper (bromide of silver gelatine) can be changed to any insoluble ferrocyanide salt, so that in this manner lantern slides or positive prints upon paper can be produced in rich color gradation. I published in 1894 some of my researches, made in this direction, which undoubtedly have a claim to priority regarding a method for toning with Berlin blue and copper ferrocyanide. The processes described at that time, however, can only practically be executed with metals, which form ferrocyanide salts, and the number of these is pretty well restricted.

The new method is independent of the solubility or insolubility of the ferrocyanide salt of the metal to be employed. The silver which forms the picture is changed first into silver ferrocyanide by having ferricyanide of potassium (red prussiate of potassium) act upon it, and then treating the same with a solution of the chloride of the metal in question. The consequence is, that the silver is changed into chloride of silver, and the metal into ferrocyanide, with its characteristic color. Particular conditions are, however, necessary to insure success with each metal.

A neutral solution of red prussiate of potassium acts only slowly upon the silver picture, particularly with regard to diapositives. A solution however, which contains 5 per cent. of red prussiate of potassium and a 10 per cent. ammonia solution, rapidly changes the whole quantity of the silver into silver ferrocyanide. The picture is then washed for at least fifteen minutes in running water, and is then placed into a 1 to 2 per cent. solution of the metal chloride in question, which contains at least 5 per cent. of ordinary muriatic acid. The exact concentration of the metal chloride solution plays no important part, but the presence of the muriatic acid is of importance, as the reaction is very much facilitated by the same. The ferrocyanide and the chloride of silver being more opaque than the metallic silver, in whose place they are put, the consequence is, that the picture not only changes with regard to its color, but that it is also intensified. The intensification degree changes, of course, with the nature of the ferrocyanide, and in many cases it is quite considerable. In place of the metal chlorides other salts of the metal can be used, provided that the solution is mixed with chloride of ammonium. The colors which are obtained are the following: with copper and uranium, red; with iron, blue; with manganese, gray; with lead and zinc, white; with vanadium, a very handsome yellow; with molybdenum, red brown; with cobalt, green; with nickel greenish. Other colors can be produced by treating the silver ferrocyanide picture, first with one metal chloride and then with the other, whereby care must be had that the first solution does not decompose all the silver ferrocyanide; subsequent treatment with iron and copper salts, for instance, will give a violet color.

It has been already remarked, that after the treatment of the silver ferrocyanide picture with the metal chloride, the colored picture will consist of a metallic ferrocyanide salt and chloride of silver. The conclusion is, that if the picture is exposed to light, the chloride of silver will blacken, and this circumstance can be used to produce a deeper color shade; the brilliancy of the color is of course considerably reduced thereby.

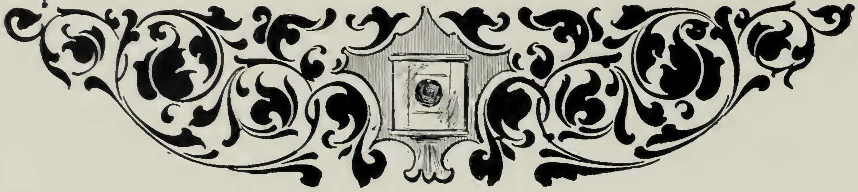
To remove the chloride of silver, a fixing medium must be applied which does not influence the ferrocyanide salt that has formed. A solution of hyposulphite of soda attacks the picture somewhat, even in diluted condition, but if a 5 per cent. fixing soda solution is mixed with a 5 per cent. solution of boracic acid, it will dissolve the chloride of silver, without ordinarily acting upon the ferrocyanide. This is, for instance, the case with regard to uranium, copper, iron, vanadium, cobalt, nickel and manganese. After removal of the chloride of silver the color of the picture is more brilliant. Molybdenum-ferrocyanide, on the contrary, shows a tendency to dissolve in the fixing soda boracic acid solution.

The metallic ferrocyanide salts may be modified in different ways by treatment with suitable reagents, and the color of the pictures can thus be changed. Manganese ferrocyanide, for instance, is changed into the corresponding superoxide by treatment with permanganate of potassium, and becomes brown. Cobalt ferrocyanide becomes brown with caustic potash. Mercury ferrocyanide becomes red with a very diluted solution of iodide of potassium.

The methods here described enable the production of lantern slides in many different colors, and by application of suitable negatives, blue, yellow and red parti-colored pictures can be produced. The red picture is obtained with copper salts, the blue picture with iron salts, and the yellow picture with vanadic acid salts.

Translated by
HENRY DIETRICH.

SOCIETIES



THE Los Angeles Camera Club was organized early in January and the following officers were elected: C. O. Valentine, President; G. G. Johnson, Vice-President; Miss A. J. Stevens, Secretary; F. H. Maude, Treasurer. The Club started with a membership of one hundred and ten, and, with the exception of the California Camera Club, of San Francisco, is the largest in the State. The success of the Club seems to be assured.

* * *

AT a meeting held last month the members of the Sacramento Camera Club effected a thorough reorganization of that institution. This Club has been of great benefit to the locality in which it is situated, the large number of slides furnished by it to the Exchange for several years past showing in the most convincing manner the beauty and desirability of that section as a place of residence. The Club is in splendid condition, and, although already well equipped, many improvements are to be made in the Club rooms. The members may confidently look for a new era of prosperity.

* * *

AT a meeting of the Galesburg (Ill.) Camera Club the first and third Wednesdays of each month were appointed for meetings, and the following officers elected: C. N. Baker, President; Arthur Nelson, Vice-President; Clarence Olson, Secretary and Treasurer.

* * *

THE Indianapolis Camera Club was organized on the 8th of January and the following officers elected: Dr. C. I. Fletcher, President; H. L. Hutson and H. S. Henkel, Vice-Presidents; H. L. Benson, Secretary; H. Pomeroy, Treasurer.

* * *

THE first annual meeting of the Greenville (N. J.) Camera Club was held on January 7th and the following officers were elected: William Robidoux, President; C. H. Chavant, Vice-President; A. A. Langer, Secretary; William Armbruster, Treasurer. The Club is in good financial condition, the report of the Treasurer showing that all debts have been paid and a balance remains in the treasury. The prospects for the success of the Club during the coming year are better than ever.

* * *

The following new officers have been elected by the East Orange (N. J.) Camera Club: G. W. Joy, President; W. L. Booth, Vice-President; Frank Nott, Secretary; C. H. Foiles, Treasurer.

The Club has decided to hold a print competition, including the work of the members, from November 30th to March 31st, with classes of interiors, exteriors and portrait slides, and, following this, a lantern slide competition.

The Camera Club of the Manual Training High School, Brooklyn. N. Y., at a meeting held on February 1st, elected the following officers: F. A. Buttrick, President; A. N. Thompson, Secretary, and Miss Zella Hasslacher, Treasurer.

◆

The Y. M. C. A. Camera Club, of Rochester, N. Y., held its annual meeting on January 16th, and elected the following officers: Dr. C. P. Howard, President; M. T. Carney, Vice-President; R. S. Paddock, Secretary; E. A. Handy, Treasurer.

◆

A meeting of the Camera Club of New Britain, Conn., was held on January 24th, and a number of slides from various cities in Canada were exhibited. The following officers were elected for the ensuing year: H. P. Richards, President; A. W. Stipeck, Vice-President; F. Wood, Secretary; F. Horsfall, Treasurer.

◆

The Camera Club of Holyoke, Mass., was organized on January 22d, and the following officers were elected: Edgar Osgood, President; Edgar Beny, Vice-President; P. J. Kennedy, Secretary and Treasurer.

◆

The Omaha (Neb.) Camera Club was organized last December with officers as follows: F. B. Millar, President; Dr. P. C. Moriarty, Vice-President; W. D. Percival, Second Vice-President; W. Wallace, Treasurer; I. S. Trostler, Secretary. The Club numbers about fifty members and has flattering prospects of success.

◆

The Plus Camera Club, Ilion, N. Y., was recently organized with the following officers: E. W. Remington, President; F. N. Russell, Vice-President; T. L. Griffis, Secretary; L. A. Diss, Treasurer. The Club is open to both sexes, and membership blanks can be had on application. Meetings will be held on the first and third Thursday of each month, and an exhibition of photographic work has been planned for the near future.

◆

The Teachers' Photographic Association, of Philadelphia, held its annual meeting on January 25th, and elected the following officers: C. H. Kain, President; Dr. G. W. Flounders, Vice-President; Miss J. Griffiths, Secretary; Dr. W. C. Jacobs, Treasurer. The Club now numbers over one hundred members.

◆

The Pendleton (Ore.) Camera Club has lately been organized with the following officers: Lee Moorhouse, President; John Kees, First Vice-President; Mrs. F. Mitchell, Second Vice-President; P. J. Wilson, Secretary; H. L. Hasbrouck, Treasurer.

◆

At the annual meeting of the Pittsburgh Amateur Photographers' Society, held on January 8th, the following officers were elected: E. E. Keller, President; H. L. Christy, Vice-President; W. J. Hunker, Treasurer; J. H. Hunker, Secretary. This Club was organized about twenty years ago, and is a branch of the Academy of Science and Art.

Our Reviewer.
School of Practical Process Engraving

A NOTABLE example of the progress of half-tone illustration and its spread over the universe is before us in the Christmas number of the *Weekly Press*, of Christchurch, New Zealand, which is published in that far-away city, and which will stand very favorable comparison with any of the best weeklies published in this country. It is a large sheet, measuring 13 x 19 inches, containing 48 pages of text and illustration, bound in a lithographed cover and accompanied by a lithographed supplement, both in colors. That which particularly deserves attention, however, is the quality of the half-tone cuts, many of which are as large as 6 x 16 inches, and all of very high class. Mr. J. N. Taylor, who by the way, made many of the original photographs used in illustrating this number, writes that these cuts are all made on zinc by the enamel process, and that all, with the exception of one or two, are made with wet plates. Several original photographs which are reproduced are sent by Mr. Taylor, and serve to show how faithfully the reproductions have been carried out. The number is exceedingly interesting and attractive.

Nos. 3 and 4 in the series of "Useful Arts and Handicrafts," edited by F. Dundas Todd, are just published under the titles "Wood-Carving for Beginners" and "Gouge Work and Indented Work" respectively, and, as their titles indicate, are guides to the beginner in these two branches of decorative handicraft. Both are carefully prepared and embellished with numerous illustrations. Price 25 cents each. May be had through our publishers.

A GUIDE TO PLAIN PENMANSHIP by F. Dundas Todd is a thoroughly practical treatise on the subject from the standpoint of sound common sense. Mr. Todd, in his introduction, says: "It is not my intention to teach any particular style of handwriting, but rather to set forth main principles, so that people past school-age can improve an indifferent style into one that is presentable and legible."

The pamphlet contains about twenty pages of suggestions and practical information aptly illustrated with specimens of good and bad penmanship. It is well worth its price, 25 cents. It may be obtained through our publishers.

GARNET-AGENDA DU PHOTOGRAPHE is the title of an interesting little French publication by Geo. Brumel in Paris. The book contains 350 pages, with illustrations, and, as the publisher says, is intended for the professional as well as for the amateur as a guide and reference book, giving useful information in every branch of photography. For those conversant with the French language it will be of value and great convenience.

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ANTHONY'S
Photographic Bulletin.

EDITORS:
PROF. CHARLES F. CHANDLER, PH.D., LL.D.
W. I. SCANDLIN.

VOL. XXXI. APRIL, 1900. NO. 4.

CONVENTIONS IN GENERAL AND THE INDIANA CONVENTION IN PARTICULAR.

THE important advances that photography is making in the public esteem are plainly to be read in the reports of the various State and national conventions held throughout the country during the past few years.

These conventions have almost without exception increased in favor, both with the public and with the craft; have improved each year in the dignity and character of their transactions, have proven themselves of advantage to the cities in which they have been held, and of inestimable benefit to those photographers who have attended them for the purpose of broadening their knowledge of the ethics of business and artistic photography and of adding to their stock of information an acquaintance with the work and methods of others, whose work is constantly influencing the public taste and establishing a demand that must be either supplied as it exists or supplemented by something better. The sixth annual convention of the Indiana Association of Photographers just held at Indianapolis is a worthy example of this, and the facts that it was welcomed to that city by the Governor of the State of Indiana and that two cities, beside the one in which the convention was in session, were desirous of obtaining the convention in 1901, together with the very full reports of the transactions in the daily press, indicate the position of the public, while the large attendance and deep interest manifested by the members in the demonstrations, lectures and business of the convention go to show the attitude of the craftsmen themselves. The reports of the Secretary and of the Treasurer both showed a splendid condition of affairs to exist, and the

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association seems to be one of the most prosperous in the entire list. A new plan, that of establishing an inter-State exhibit, was adopted which it would seem might well be tried by other State conventions; this plan is to send each year one picture from the exhibit, which may be selected by judges as being *the best*, to the next State convention that may be held, with request that it be forwarded to the next and so on until it has gone the rounds of all State conventions.

The matter of a permanent home was discussed, but definite action not taken. Winona Park was selected for the 1901 meetings, and the officers for the coming year were elected as follows: President, W. O. Nicely, of Bloomington; First Vice-President, W. E. Vilmer, of Crown Point; Second Vice-President, Milo Harley, Logansport; Secretary, George Parrot, Warsaw; Treasurer, F. M. Lacey, of Indianapolis. The retiring President, Mr. C. R. Reeves, was presented before adjournment with a handsome watch in token of the esteem in which he is held by his fellow-members and their appreciation of his efforts, to which is largely due the present prosperous condition of the Association. A list of the prize winners will be found on another page of the BULLETIN. Long life and increasing prosperity to the Indiana Association of Photographers. May its example be followed by every State in the Union and photography thereby be raised in importance and dignity and worth in the business economy of our country.

RED PRINTS.

THE following directions for making red prints are taken from the *Silver Sunbeam*, and may be looked upon as being thoroughly reliable:

Float a sheet of plain paper for four minutes upon a bath, made up of equal quantities of nitrate of silver and nitrate of uranium, in about six times their weight of water; drain the paper and allow to thoroughly dry—in a non-actinic light, of course (Edr.).

When dry, expose under the negative for eight or ten minutes, then wash and immerse in the following bath:

Ferridcyanide of potassium	30 grains.
Rain water	3 ounces.

In a few minutes the picture will appear of a red color, which is fixed by a thorough washing in water.

Another method, recommended by many, is to immerse a thoroughly fixed and washed bromide print in a 15 per cent. solution of chloride of copper. In this bath the picture will disappear entirely, after which it must be thoroughly washed and immersed for a few seconds in a 5 per cent. solution of ferrocyanide of potassium. After another thorough washing it is transferred to a 2 per cent. bath of chloride of copper, and again washed, when the picture will reappear in a deep red color. Careful washing after each operation is most important.

Items of Interest

A CORRESPONDENT of one of the English journals calls attention to the cause of frequent cases of lack of sharpness and definition in prints, even though made from negatives which are perfectly sharp and from which, under certain conditions, perfect prints have been obtained. He says that on several occasions, having to print during cold, moist weather, and having more frames in use than could be handled under the glass of his printing room, which latter is kept at a comfortable temperature, he has placed a portion of them outside the room on the window ledge, and has noticed that the prints made in these frames have been degraded in definition; the reason of which he asserts to be that the condensation of moisture in the cold atmosphere forms a thin film on the glass surface of the negative that is responsible for the unsharpness. This ground does not seem to us to be tenable, as, if such were the case, all prints made under ground-glass or through tissue paper would be doomed, and following the writer's line of reasoning, every additional sheet of tissue would increase the trouble ; whereas, in practice it is not found to work that way. Is it not more likely to be the result of a temporary change in the nature of the gelatine film or of the sensitized emulsion of the paper, both of which have been demonstrated to be extremely sensitive to moisture ? The whole question of the action of gelatine under varying and even under apparently constant conditions is one upon which much remains to be said, and it is in this direction that we believe the trouble should be looked for, if in reality it exists.

* * *

MENTION has been previously made in the BULLETIN of the importance attaching to the permanence and reliability of gelatine plates, particularly where used in such fields of work as astronomical investigations, where photographic records have been made of various regions of the heavens, with a view to comparing them with other records of the same regions, subsequently obtained, and a very startling discovery is said to have been brought to light through the *English Mechanic*, in an article which asserts that Dr. Isaac Roberts makes the claim that, notwithstanding the employment of every conceivable care in the development and fixing of negatives, the images of faint stars fade out of the films after a comparatively few years. In illustration of this statement two instances are mentioned : the first, being of a plate taken in February, 1886, which, shortly after it was made, showed 403 stars photographed, but which on examination in May, 1895, showed only 272 ; and the second, of a negative made in

March, 1886, showing 364, but which in May, 1895, showed only 234 remaining.

If these two examples are representative in any degree, a vast disappointment seems to be in store for the scientific world, as the outcome of the very large number of astronomical negatives that has been made in the past twenty years. It will be interesting to know of further comparisons in this matter and also to know if the older wet plate negatives are subject to the same deterioration, and if so, to what extent, in comparison with gelatine.

The Rutherfurd plates, made about twenty-five years ago, by the wet plate process, on albumenized glass, will serve well as a basis for this comparison, and we hope to learn of steps being taken shortly, to bring the matter to a careful conclusion—as, if the silver image in a gelatine base is liable to deterioration with time, some means should be sought to obtain a more permanent vehicle.

* * *

We are pleased to read that at the stated meeting of the Photographic Society of Philadelphia, held on the 10th of January last, Mr. Alfred Steiglitz was elected to honorary membership, and was, by unanimous vote of the Society, endorsed as the American delegate to the Congress of Photography at the Paris Exposition in the coming summer. This action on the part of the Society is a well-deserved tribute to Mr. Steiglitz's brilliant achievements in the field of pictorial photography.

* * *

It is not accorded to many of us to celebrate a ninety-second birthday, and still to count ourselves a part of the business community of which we form a part. Mr. Josiah Johnson Hawes, of Boston, is an exception to the rule, having lately passed his ninety-second milestone, and still continues to hold possession of the photographic studio on Tremont Row, where, for more than fifty years, he has carried on the work of portrait photography, and under whose hand many of the most noted men and women of a generation passed, have been posed. Mr. Hawes counts among his patrons Daniel Webster, Rufus Choate, Lyman Beecher, Jenny Lind, Whittier, Holmes and many others whose names are familiar in the world of history. His younger brothers of the camera will cordially congratulate him upon his achievements, and join in wishing him peace and prosperity in his remaining years.

* * *

The Buffalo Photo Material Company announces the opening of their store, No. 15 Niagara street (near Main), Buffalo, on Saturday, March 17, 1900, with a complete line of modern photographic supplies, and cordially invites all interested in photography to call and inspect their store and stock.

This store is replete with a new and up-to-date line of high-grade cameras, lenses, plates and general supplies, and will doubtless receive its full share of the custom of the city and neighborhood in which it is located. Free use of darkroom and burnisher is offered to its patrons, and developing and finishing for amateurs is carefully attended to.

◆

Mr. Dwight L. Elmendorf's series of Lenten lectures now being given at Sherry's are attracting much attention and winning deserved praise. The present course embraces: "With the Army in Luzon and Cuba," "From New York to Paris," "A Tramp Through the Alps" and "The Yellowstone Park." The quality of the slides shown and the smoothness with which they are manipulated give an exquisite charm to the lectures.

◆

In a most interesting and instructive lecture recently delivered by Professor Charles F. Himes before The Chemical Section, Photographic and Microscopic Branch of the Franklin Institute of Philadelphia, on "The Making of Photography," the salient points in its history were ably dealt with, the lecturer holding strongly to the view that Daguerre is entitled to credit for the beginning of progress in photography, and that he still remains its central figure. Conceding all just praise to others, he yet claims that photographic events date backward and forward from Daguerre. A full report of this lecture is published in the December number of the *Journal* of the Franklin Institute, and is well worth some trouble to obtain and read. We regret that space is not sufficient to give a more detailed account of it at this time.

◆

The Illinois College of Photography is making rapid growth, and, finding their facilities inadequate, the management have lately acquired a large estate in Effingham, not far from their old quarters, we understand, and will at once begin operations on a new building, which, it is intended, shall be equipped throughout in the most perfect manner possible. This School of Photography is, we believe, unique, in this country at least, and its President, Mr. L. H. Bissell, is to be congratulated on the success that has attended his efforts.

◆

The third international salon and exhibition of the Pittsburg Amateur Photographic Society is announced to be held in the Carnegie Art Galleries from May 17 to 31, 1900. "As heretofore, there will be two separate and distinct divisions or exhibitions—the salon and general exhibition—both of which will be open to all artistic workers throughout the world." Full information may be had by addressing Mr. Joseph H. Hunter, Secretary, Carnegie Library, Pittsburg, Pa.

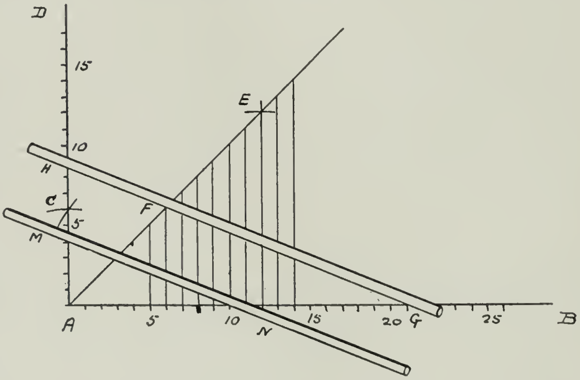
◆

The very interesting article by Mr. James B. Carrington in a recent number of *Scribner's Magazine*, on "New York at Night," demonstrates what a picturesque field of photography has until very lately remained almost undiscovered. Mr. Carrington has produced a series of night photographs, quite remarkable for pictorial and historical effect. These pictures are woven into the text of the article with skill, and together they make an interesting and valuable contribution to photographic literature.

TO FIND THE CONJUGATE FOCI OF A LENS WITH THE AID OF A BROOMSTICK AND WITHOUT CALCULATION.

By F. C. Lambert.

To some people anything in the nature of a calculation (*i. e.*, "figures") is most distasteful. The manipulation of simple fractions becomes a puzzle to many minds very shortly after school days are over. To relieve our friends of this kind we have devised a very simple method of arriving at the conjugates of any lens under any ordinary conditions of use without anything more serious than reading off the inches along a tape-measure. The method is based on well-known principles, but does not seem to have been published in the very simple form now to be given. It is therefore well worth any-one's attention by reason of its very simple character. Our requisites are a large sheet of paper; or, still better, of thin card—a tape measure, two or three pins, a pencil, and a piece of broomstick. This last-named part of our outfit is quite essential Moreover, we should take care to select a straight, even, and uniformly round stick. For convenience it may be, say, 3 or 4 feet long. This broomstick is to be used as a straight edge and parallel ruler.



And now to commence operations. Lay your sheet of cardboard on a flat table. A few inches from the long side rule a straight line *A B*. Now commencing at *A*, and with aid of the tape measure mark your line into inches, using a fairly hard and finely pointed pencil for the purpose. Next, pass a couple of pins through your tape measure just 6 inches apart. Insert the point of one pin at *A*, and with the point of the other pin (just 6 inches away from the first) trace a circular scratch on the card, as at *C*. Then put your pins 10 inches apart. Put the first pin at the 8-inch mark along *A B* (see the thick mark), and with your 10-inch distance sweep across the first scratch at *C*. If now we draw a straight line from *A* to the crossing point of the two scratches at *C*, then we shall have *A B* and *A C* at right angles. [This method of getting a right angle is useful to remember for many purposes. All we need do is to draw a triangle with its three sides in the proportion of 3, 4 and 5.]

Next divide the line *A D* into inch marks, just the same as in the case of *A B*. Our next step is to get the line *A E* exactly bisecting the angle between *A B* and *A D*. This we do by means of our tape measure and pins. Select any convenient number of inches—say, 12—and pass the two pins through the tape this exact distance apart. Put one pin at the 12-inch mark along *A B*, and with the other pin make a circular scratch at or about *E*. Then transfer your center pin to the 12-inch mark along *A D*, and again make a circular arc towards *E*. Now join *A* with the crossing point of the two scratches at *E*.

We have now to graduate the line *A E* in the following way: Stick a pin at *A* and another at *D*, both quite perpendicular to the card. Now roll your broomstick up to these two pins so that it just touches them. Then carefully roll it parallel to itself until you come to the 5-inch mark along *A B*. Now, using your broomstick as ruler, draw a fine line from the 5-inch mark until it meets the line *A E*. This line is parallel to *A D*, of course. Then roll your ruler to the next inch-mark, viz., 6, and again draw a second parallel line, and so on. The number of lines you will require will depend upon the number of lenses you are going to employ. We here show a set of lines for 5, 6, 7 and so on by inches up to 14 inches. You will, of course, only require those which correspond to the focal length of your lenses. All others may be omitted.

We are now ready to use our apparatus and will take a few instances of its application. (1) First, you are about to enlarge a 4 x 3 negative on to 10 x 8 paper, and want the 4-inch side to fill the 10 inches of paper, and the lens to be used is of 6-inch focus. The question is what are the conjugate distances. Place a pin at 4 inches in *A D*, and another at 10 inches in *A B*. Bring up your broomstick just to touch these two pins, as shown by *M N*. Then carefully roll it parallel to itself until you can just get a pin vertically down at *F*, the 6-inch (focus) mark in *E*. Then, holding your roller touching *F*, insert two pins where the roller cuts *A B* and *A D*, as at *G* and *H*.

These distances *A G* and *A H* are the required conjugates of the lens. We find *A G* is 21 inches and *A H* about midway between the 8 and 9-inch marks. (Calculation tells us that the numbers ought to be 21 and $8\frac{2}{5}$.)

(2) Again: We wish to make an apparatus for making lantern slides (say 3 inches square) from 12 x 10 negatives, and to use a 5-inch focus lens. Required the length of base board for the apparatus. Put in a pin at 12 inches in *A B* and another at 3 inches in *A D*. Bring up your roller to touch both pins. Then roll it along parallel to itself until you can insert a pin in the 5-inch focus mark in *A E* and read off along *A D* and *A B*. We shall find these to be a little beyond the 6-inch, and just at 25 inches respectively. (Calculation gives $6\frac{1}{4}$ and 25.) If then we add these together we get the required length of base board, *i. e.*, from negative to lantern plate.

(3) Our enlarging camera only racks out to 40 inches, and our shortest focus lens is 10 inches. How large can we get a print from a 4 x 3 negative? Observing that our scale of inches along *A B* does not go to 40, we agree to take half quantities throughout. Put in a pin at 20 along *A B* and at 5 along *A E*. Bring up the roller to touch both pins. Then remove them and put in a pin at 2 along *A D* and roll the

broomstick up to touch this and read off along *A B*. This we find is 6. But as each inch on our card represents 2 inches we rightly infer that our limit of enlargement would be 12 inches.

It may thus be seen that if only our lines are first carefully drawn the apparatus can be made to save us all the ordinary calculations that the photographer is likely to meet with in daily practice.

P. S.—Obviously it is of prime importance that our broomstick should roll truly parallel to itself. Fortunately we can easily test this in the following way: Put in two pins near the edge of your sheet of card. Bring up the roller to just touch both. Then roll it along to near the other side of the card, and put in two more pins just to touch. Now, take up the roller and turn it round end for end. If the four pins tell true with the roller in either position, it is good and true. But, if not, it is more or less conical. Fortunately broom-handles are now almost always machine turned, and are generally quite accurate enough for the purpose.

REMINISCENCES OF THE HOUSE OF E. & H. T. ANTHONY & COMPANY.

By Henry Dietrich.

WE have moved, and 591 Broadway is no longer the Mecca of photographic devotees. The familiar sounds of "camera," "Aristo paper," "dry plates," etc., will no longer ring within its walls. Finer and more modern quarters have been selected at Fifth avenue, Seventeenth and Eighteenth streets, and with the coming century the house will go forward on its photographic march, which I hope will be as successful as in the past. But this moving business reminds me that my own lease may run out before long. Age is coming on, and forty years in harness in the same house makes almost a business lifetime. When I think of the many good old friends and colleagues who have passed away during this period, sadness fills my heart, but at the same time a feeling of thankfulness remains, that I have been spared to witness the wonderful changes and improvements, the gigantic progress, that photography has made within this time. What a variety of pictures have passed in review, from the time-honored Daguerreotype, Melainotype, Ambrotype, and the first introduced photographic print on albumen papers to the present stylish and artistic photograph on Aristo. What a variety of materials and apparatus from the large, clumsy and heavily built camera of the olden times, with its "swamp angel" of a lens, to the present bijou styles of elegant hand cameras for amateurs and professionals.

It is now thirty-one years ago (February 10, 1869) that we moved to 591 Broadway from 501 Broadway, and Mr. Edward Anthony considered it at that time a good move as to locality, space and business generally. "Up town" was the cry. Times have changed again, progressive impulse still holds sway, the upward tendency still obtains, and, obedient to its dictates, we once again have moved up town.

Well do I remember the day when I made my first entry at 501 Broadway. It was in September, 1860, in answer to an advertisement I called, but was seriously in doubt whether I should go upstairs or not, seeing nothing at the entrance but a small showcase containing a few pictures and some bottles of collodion and varnish. The firm's name at that time was E. Anthony. I finally ventured upstairs, and great was my astonishment when I reached the upper floor to find it stocked with all kinds of photographic paraphernalia, to me a great mystery. I was engaged and suggested making a written contract. Mr. Anthony, however, said in his quiet way, "There is no necessity for it; we consider your position permanent." He kept his word well in this as in all other matters.

Pictures on albumen paper were then in their infancy, almost unknown to the general public, and the favorite picture was the so-called Ambrotype, a direct positive on purple glass, with black asphaltum varnish backing, put up in a case with mat, glass and preserver. The sizes of pictures varied greatly, and included $\frac{1}{16}$, $\frac{1}{9}$, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{4}{4}$, which last size corresponds with our present 6½ x 8½, and occasionally a larger size, which latter were greatly admired and much talked about. It took at this time from three to six glass cutters, cutting from morning until night, to fill orders and keep up the supply, while three or four young ladies were constantly occupied in fitting the cases. And those cases!!! I have studied languages, algebra, mathematics, and even buried my youthful head in trigonometry, but the Ambrotype cases beat them all. They were classified by letters—X, XX, XXX, CVX, RRX, KN hook, KN 2 hooks, TM snap, and each letter made in a variety of sizes. I was in utter despair when I started, but finally succeeded in becoming thoroughly acquainted with them.

The frame department, which in later years occupied a whole floor, was at this time just started. A small closet with glass door contained from one to two dozen 6½ x 8½ and 8 x 10 oval glass frames, which constituted the entire stock. It was about this time that the first stereoscope (opera-glass style) made its appearance from Paris. Thus the winter passed, and with the spring of 1861 came the declaration of war. The first shot was fired at Fort Sumter, and New York was in fever heat. The big meeting on Union Square will never be forgotten by those who witnessed it, and few men on that day cared to be seen on the street without a Union badge. No desk, no counting-room, no work-bench was without a flag decoration, and when Mr. Edward Anthony came back to the store from down town at noontime of that day his silk hat was pierced and decorated by two pretty good-sized United States flags.

After three years' leave of absence from the store and service in the army I returned to my old quarters. What a change had taken place in that period. Ambrotypes on the decrease, slowly, but surely; prints on albumen paper on the increase, their reputation rising day by day. American manufacturers of albumen paper had already started. On one of the upper floors we manufactured our own albumen paper. *Cartes de visite* were at that time the principal style. Stereoscopic pictures and stereoscopes (Professor Towler had in the meantime invented the sliding stereoscope) commenced to be fashionable. A special clerk had to attend to the orders for stereoscopes, which were sold by the gross. The firm's name had now changed to E. & H. T. Anthony, Mr. Edward Anthony having taken his brother, Henry T., into the firm as a partner. Mr. Henry T. Anthony superintended the technical, and, to a large degree, the chemical, part of the business, and was always ready and willing to give advice to the numerous operators, printers and retouchers from the different galleries, who came to look upon him as the best friend they had.

Anthony's collodion and varnish had now gained a world-wide reputation, and orders for it by the barrel were frequently received. Albums (in the beginning with openings for *cartes de visite* only) had made a favorable entry into the market, and were manufactured in large quantities, and the firm had rented a whole floor in the old New Haven Railroad Building, corner of Franklin and White streets, where fifty girls and many workmen were employed in their manufacture. Another factory for the manufacture of albumen paper was opened at 65 Broadway. The business had now steadily increased to such an extent that the members of the firm were obliged to look for another partner to relieve them somewhat of the almost too heavy burden of their work, and Mr. W. H. Badeau, a trusted employee, was taken into the firm. The firm's name was changed at this time to E. & H. T. Anthony & Company. After a lapse of several years Mr. Badeau severed his connection with the house, and Mr. V. M. Wilcox, another employee, took his place. The number of employees had now almost doubled, and the business had increased to many times its original volume.

Such, briefly, are a few of the old-time memories. Recent events are so well known that it may not be within the sphere of this little sketch to dwell further upon the story of the house, but I may be permitted to say that Mr. R. A. Anthony, the President of the present corporation and the son of Mr. Edward Anthony, and Mr. F. A. Anthony, the energetic Secretary and Treasurer, may be depended upon to maintain the old reputation of the house, and a successful business career will no doubt accompany them to the new quarters at 122 and 124 Fifth avenue.

An English inventor is reported to have produced a moving-picture machine, which he calls the kammatograph. The description of this invention, as published in the English journals, appears to coincide in every particular with the description of a similar machine which was put upon the market here in the latter part of 1897 and advertised in several issues of the Bulletin under the name of "The Spiral" Camera. In both, the negatives are made upon a circular dry plate, rapidly revolved before the lens with a correcting motion, which changes their relative positions when a complete circle of negatives has been made so that a band of pictures in concentric lines covers the plate from edge to center. This negative plate is reproduced on a similar one by contact, and the resulting transparency is shown in the same machine in which the original negative was produced. We shall look with interest for further reports of this new invention

WINTER PHOTOGRAPHY ALONG THE BEACHES.

By H. McBean Johnstone.

DURING July and August, while the summer hotels are in full swing, is probably the time when the most amateur photographs are taken along the beaches. Occasionally one runs across an amateur living within reasonable distance of the water, who takes pleasure in working along its banks in midwinter, but in the majority of cases, when Jack Frost puts out his head, and his icy breath has a clean sweep down the unprotected sands, Mr. Photographer prefers to spend his time on indoor portraiture, or some other branch of the art, where he can keep his fingers warm.

The abundance of ice and snow effects full of picturesque beauty affords a splendid diversity of opportunities in winter photography. Spots, which in summer are richly verdant, take on with their white blanket an entirely new aspect and are filled with a different and weird charm. Every oak stripped of its mass of brown leaves, every gnarled and knotted vine now showing all its twists and picturesque deformities, even every wayside fence, with its dazzling background, presents a different appearance.

Strange, isn't it, that those who take pleasure in photographing the lake, topped by a dark mass of clouds, that slowly unroll as though filled with a great gust of wind that bellies them out like the sails of a ship, leaving all below inky black except the whitecaps on the tops of the breakers, strange that those see no beauty in that same lake, when Johnny Frost makes it a desert of ice, broken here and there by a blue oasis of water, and bounded by frozen banks, when some fierce storm has piled the ice up breast high, or higher.

Many photographers mistakenly believe that a snow scene is necessarily monotonous in a photograph. Winter pictures demand more thought and study than a summer view of the same scene, but in the properly finished photograph, the result is a pictorial triumph.

Among the snow and ice photographs one sees, the feeling is vaguely present that they lack varieties of depth, and drifts, and though it may not be guessed by the uninitiated, the real cause of this is that the photographer, in a probable attempt to secure some relief for the unvarying whiteness of the landscape, has chosen a bright sunny day, hoping to secure this effect from the contrast of shadows on the snow. The result is, that instead of the looked-for contrast, he has a pale gray snow as compared with the nearly white sky, or else the whole scene is so over-exposed that the near snow and that in the distance appears equally white, and the resulting photograph is flat. Had the sky been overcast with gray clouds the snow would have seemed more spotlessly white and dazzling, and each rift and hollow more conspicuously marked, while at the same time the feeling of wintry gloom would be more forcibly conveyed to the mind of the observer.

No matter how successful a photographer may be in the technical side of his work, he fails entirely in his mission if he does not impress those who look at his pictures with that sentiment and feeling which is present in every scene in Nature; and if he can do this, no matter how badly he finishes his photographs, he can honestly claim the title of artist.

In winter photography, it will be found that a small bit, such as the skeleton of a grand old oak, stripped bare, or the gnarled deformities of a twining vine, will make a far better study than an attempt to embrace a larger scene, like a stretch of beach or a broad field of ice. And then, for marvelously beautiful foreground effects, we have such things as weeds and rushes, or a fallen, but once mighty, giant of the shore woods, half buried in the snow, and roofed in the most picturesque manner—just as the snow fell—flake by flake.

At every turn and bend in the shore are to be seen fresh and novel subjects for an artist's camera. The misty atmosphere, produced by a small snowstorm, blends the stretch of shore with its fish shanties, upturned boats, and wave-washed logs into a deep, softening background, from which the foreground, full of detail, stands out, so strong and so bold, yet without any glaring harshness of outline.

What a wealth of beauty it all forms, and foolish, indeed, is the photographer, professional or amateur, who does not take advantage of it, if he can.

THE INFLUENCE OF THE COMBINED TONING AND FIXING BATH UPON THE SILVER PICTURE.

By Florence.

THE toning as well as the fixing processes in silver printing have both to be executed with care and intelligence. Upon them depends the appearance and durability of the silver picture. Nevertheless, it is quite frequently looked upon and even manipulated with a great deal of indifference, and the paper is oftentimes held responsible when yellow spots and other disagreeable defects make their appearance.

It cannot be denied that with albumen paper other conditions prevailed, and it was recognized that the most minute accuracy and cleanliness was required to obtain good results. To-day things are a little different. The emulsion paper, generally speaking, is easy to tone, but it requires a certain routine, and the material is of considerable influence. Aside from this, it is made still easier for the operator, by use of the tone-fixing bath. But he does not consider the danger he confronts, thus opening the path to destruction. I know that many do not agree with my view, but assert that the tone-fixing process is a safe process. To convince these, I will explain what influence the tone-fixing bath may exercise upon the silver picture.

To get a clear idea of the action of the ordinarily employed combined tone-fixing bath, we have to learn what happens during toning and fixing, and the influence of the different chemicals upon each other. In toning, the chloride of gold unites with the precipitate of the silver picture, and changes this into chloride of silver, while the gold will precipitate as metal when it loses its chlorine. This exchange does not take place uniformly everywhere, but it seems to act only (under certain conditions) where the substitution product, formed of pure chloride of silver (and nitrate of silver by secondary action), is located. The substitution products obtained from the light-sensitive acid-silver salts—for instance, citric tartaric and phosphoric silver compounds—behave in general a little differently towards many toning baths. Prints containing such compounds in larger quantity oftentimes tone with great difficulty in the gold bath.

If we treat a print with fixing soda solution, all chloride of silver is removed—that is, dissolved. But by this action the material of the whole precipitate, appearing most suitable for toning, is attacked and changed, and in such a manner that the simple toning bath exercises only a very slow action or none whatever. This shows the necessity of toning before fixing in the simple alkaline toning bath.

If a sulphocyanide gold solution is used instead of an alkaline gold solution, the same actions will take place, only that cyanide of silver will form, which is replaced by gold. The action of the sulphocyanide upon the silver picture is much greater than that of the chloride. With the former, such prints may be toned, as contain not only an abundance of precipitate from the so-called acid silver salts, but also such prints as had already been treated with fixing soda solution. It makes a great difference, therefore, whether the fixing soda solution is still present, or has been washed out, but a toning will always take place. The possibility of producing a combined bath, which furnishes a gold toning, is therefore apparent. The question is only under what conditions it will work and what the results will be.

Theoretically, nothing can be said here but to obtain facts ; we must look to the practical part. A great number of experiments, which I have made, have convinced me that a large quantity of sulphocyanide and an equally considerable quantity of gold is necessary, if the process has to proceed rapidly. The weaker the fixing soda solution, the much easier the toning will be. The duration of the toning process is between twenty to forty minutes, or even longer. Fixed and washed prints, however, can be toned to equal intensity in about five minutes with the same quantity of sulphocyanide gold solution.

The tone of the picture passes from yellow-brown and brown to violet and blue. The more sulphocyanide the darker the tones will become, but the tones obtained with different papers vary greatly, unless the toning is carried up to the blue. Double tones do not take place, because a change is apparently effected by the fixing soda, which brings the different precipitates more to a unit with regard to toning capability. The *résumé* of these experiences may be stated as follows:

1. Fixing soda influences toning considerably.

2. If the bath is rich in gold, a relatively long time is required for toning.

3. The picture tone is governed by the nature of the picture and the duration of toning.

In addition to this I would also remark that the tone is characterized as a gold toning tone by reason of its becoming bluer during drying.

With such a bath no fault can be found, if it was correctly produced, and for that it is necessary that the sulphocyanide gold solution is gradually and in small portions added to the quite fresh fixing soda solution and well shaken. No precipitate forms, there is no odor, and the mixture remains clear, but it can be used only once. After a few days it has a disagreeable smell, which gives evidence that a change has taken place in the bath, and at the bottom of the flask is more or less of a precipitate. If this bath is worked, one will be surprised that the duration of toning is shorter than before, while the prints assume an irregular tone, which passes into slate gray and violet brown, instead of pure violet and blue. An expert would tell us that the bath was now "ripe," and that it would work better gradually. We believe him, and find after some time that the "ripening" has still advanced, and that the bath at the same time has become more economical; it tones in eight minutes, and without any addition of gold, but, unfortunately, in the well-known tone, and even an addition of gold will not change it. If we investigate these facts, we easily find the cause to be sulphur toning. Gold sulphocyanide of ammonium, nitrate of silver, citric acid, etc., decompose the fixing soda solution, and the decomposition, once introduced, progresses more and more. A peculiar sulphur compound forms hereby, which seems to be not exactly known, but which is ordinarily designated as hydrogen sulphide. It possesses the property to change the metallic precipitates of which the picture consists into silver sulphide of different coloration. Upon the dark silver precipitate this coloration appears mostly in the tone peculiar to gold toning, and is easily taken for such.

Two questions of great importance have now to be considered: 1. Is the toning in the sulphurizing baths exclusively sulphur toning, or can low gold toning take place besides? 2. Is the silver sulphide which formed durable or does it change, and what processes are connected herewith? Concerning the first point, there are different, and, unfortunately, very erroneous opinions. As the foregoing, based upon experience, demonstrates clearly, the gold toning in presence of fixing soda and good gold lasts at least from 15 to 20 minutes. But if the toning is finished in from 7 to 10 minutes in a sulphurizing bath, sulphur toning undoubtedly takes place. This shows that an action of the gold cannot take place, because the exchange of the gold can be made only with sulphocyanide of silver, but not with silver sulphide. The tone is therefore theoretically formed only by the peculiar brown precipitate, and the silver sulphide resting upon the same, and partly formed from it, which is practically fully confirmed. This shows also, what I would like to repeat here, that the tone-fixing bath, which acts by sulphur toning, will tone any silver paper, even if a good gold bath furnishes the worst results.

The sulphur tone cannot be modified much ; in warmer tones it depends particularly upon the behavior of the precipitation product of the picture in its coloration after fixing. If this is red, agreeable violet tones are obtained ; if it is brown, the tones are less good ; if the action is not extended to the most intense blue coloration. Therefore, more or less suitable paper can be had for the universal medium, the "tone-fixing bath."

At longer toning time than ten minutes, it is possible that a gold toning can be combined with a sulphur toning, because the latter will still act, even if the gold toning preceded. The reverse, according to my experience, does not take place.

Considering point 2, nothing definite can be said. Silver sulphide may be durable enough, but in such a fine distribution it is too much exposed to the influence of the air and to chemical action. The greatest enemy of the same is moisture. In moist atmosphere a decomposition of the silver sulphide takes place gradually, and it appears more than probable that hydrogen sulphide forms. The consequence is that the picture loses its tone, and that tone makes its appearance which the print would have shown when fixed in fresh fixing soda solution. But under the influence of the hydrogen sulphide in the whole film (which, as known, contains an insoluble silver compound), the formation of yellow silver sulphide will take place, and all whites appear in a yellow coloration, which passes eventually towards orange. In entirely dry atmosphere and under a good coating of varnish a change will not take place so easily, and pictures, generally recognized as not durable can thus be designated as durable with sulphur toning.

The yellow coloration may also appear if the picture was toned with gold in a separate bath (or with platinum), and it was afterwards treated with the tone-fixing bath. In this case it is the fixing soda, being in a state of decomposition, which effects, in the film with the silver, an insoluble, instead of a soluble, connection, which likewise decomposes under the influence of moisture, and causes a general yellow coloration by formation of the yellow silver sulphide. In this case none, or only a faint reduction of the tone, takes place.

If both causes appear in the same picture, the same will not only be yellow in the whites, and have a disagreeable brown tone, but it is totally corroded in the shadow parts.

My opinion is that, if durable pictures are wanted, the sulphur toning should be avoided, by all means. Combined baths are, therefore, not applicable. It is very difficult to determine whether a bath acts by sulphur toning or not.

A simple fixing bath, repeatedly used, has, in most cases, a sulphurizing action, which can easily be proven by fixing of gold-toned prints in it, and in a fresh bath. But a bath which shows the least characteristic odor of rotten eggs will sulphurize, and it is, perhaps, hardly necessary to point to the fact that most of the tone-fixing baths emit this odor. It has been presumed that the black precipitate was the cause of this yellow coloring, by depositing upon the film. That is conditionally correct, if it settles upon the film and remains there. But it can be filtered, or wiped off; but even then a yellowing will take place, and why? The black precipitate is silver sulphide, and the medium determining the tone is also silver sulphide. If, therefore, the former acts, the latter has to act also, as has been shown above.

Finally, I would call attention to the fact that, if we tone with a gold bath and fix afterwards, the picture will be durable even under unfavorable conditions. But if we fix first and tone afterwards, without a thorough washing, a yellowing will take place.

Translated by Henry Dietrich.

OVER-RADIATION AND HALO.

By E. Volkner.

By these words we describe that appearance on positive photographic pictures, when bright parts of the picture do not show a sharp or sufficient contrast against the dark parts, but only a gradually diminishing edge of light.

The cause of this disagreeable appearance may have different sources, because it can be looked for in the plate as well as in the objective. The first-mentioned case is more generally known. By reflection from the reverse side of the glass the halo will form around particularly bright parts of the picture, and by knowing the cause of the defect the way to remedy it is shown. These reversed reflexes are prevented by a suitable coating or backing of the plate. But it is less known that the reason for these halos may be found in the objective itself and its construction, and also accidental circumstances, independent of its construction. Now we know that the general demand of photographers is for light but powerful lenses. They cannot get them powerful enough. Thus the optician may sometimes overdo himself in satisfying this demand. If the largest stops are then applied an over-radiation may easily take place, and this will disappear again when a smaller stop is used.

We all know that a halo will always form, if at all, on the edge between the brightest and darkest tones, and that in the middle tones it can hardly be observed. An objective, subject to over-radiation, may therefore sometimes give good negatives under favorable circumstances, but it will never be perfect.

An over-radiation may finally take place by a defect of the objective, but only accidental, although its cause is generally not recognized. If the objective is left unused for some time, a fine matt and hardly visible deposit may form on the lens surface exposed to light. From the outside it can easily be removed, but if not looked after it will be so much more disturbing on the inside. Take the lens out of its mounting and wipe off just one-half of the inner surface, and it can hardly be believed what a coating has been deposited thereon. The same happens to an objective taken from a cold room into a warm room, and if not looked after it will show the same defect very soon. Thorough cleaning is necessary or a deposit will gradually form, and the best lens will then deteriorate in course of time.

Translated by Henry Dietrich.

Photographed by J. A. BRUSH Minneapolis, Minn.

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BENDING OF THE CARDBOARD IN MOUNTING PRINTS.

By H. von Beck.

To prevent the bending of mounted prints, we should consider the causes. The paper, as is well known, stretches when moist. Now, if such a moist print is larger than it is when in a dry state, it is evident that during drying the supporting cardboard is influenced by the shrinkage, and will naturally contract in the same measure. If the cardboard is pretty heavy, the effect on it by the reduced dimensions of the print will be that it bends. Thin mounts show the contracting effect in a more irregular way, and are influenced more or less by the width of margin, which remains dry. This is seen best if a print is mounted on writing paper. There is in this case no longer a hoop-like bending, but a kind of wave formation. To overcome this, a larger piece of thin paper may be pasted on the back, by which all straining is removed, but practically this is only applicable to heavy board. By further reflection we might presume that a pasting medium containing less water would reduce the evil. Some operators mount their pictures after this manner, soaking them thoroughly with water, which is afterwards removed with blotting paper and the prints mounted with a stiff paste.

It is also a fact that if prints have become too dry, the water of the paste is constantly soaked up, so that a close contact of the paste with the paper fiber is almost excluded. Starch paste contains a large quantity of water, and its consistency has to be regulated by the mounting method. If not correctly mounted, the edges will peel off, because the moisture disappeared there first, and left not sufficient paste. In the center we find the sticking power best, the moisture lasting there longest. With gum arabic or gelatine, a swelling of the paper fiber is favorable to success, but not so absolutely necessary. But by excluding the water, a bending will not take place. Have we now such a pasting medium in the laboratory? Certainly; for instance, india-rubber, dissolved in benzine. This sticks excellently, leaves no mark, if properly used, and dries quickly. But there is the disadvantage, that pictures mounted with this substance will peel off easily, if the thin rubber film has become hardened by long contact with the oxygen of the atmosphere. Alcoholic resin solutions have been tried, but they will penetrate partly to the silver strata of the picture and attack the film, rendering this mountant impracticable. We are, therefore, obliged to look for a pasting medium containing water as our only recourse. A good method would be the following: The prints are brushed with a strong paste and then dried. The cardboard is then exposed to steam, in which the fiber will swell without letting too much water penetrate, so that the inner part of the board remains dry. The dry picture is now pressed upon the cardboard.

This method, of course, can be applied only on plain cardboard. On thin mounts this method cannot be applied. Another application of gelatine is now proposed, which may meet the requirements in a better way. It is based on the application of a large quantity of alcohol in place of the water in the gelatine. We have to consider that gelatine is insoluble in alcohol. We know, also, that an alcohol addition to stripping gelatine, if not carefully manipulated, will precipitate the same. It is, therefore, interesting to compare the behavior of good and bad qualities of gelatine. Good gelatine will coagulate quickly and precipitate, when pouring out the aqueous solution. An addition of alcohol will accelerate the precipitation. But, however useful this property may be in the emulsion process, it is disturbing in the mounting of large-sized pictures. Inferior gelatine requires more time to coagulate and is much more soluble in cold water. For this reason it has been used a good deal in the auto process. The solubility of the preparation was regulated by addition of albumen. The solution was sensitive, but the filtering was somewhat tedious. Common glue, of course, cannot be used for mounting on account of its colors and certain ingredients, which would have a detrimental influence upon the silver picture. After many experiments I have succeeded in producing a mixture, which permits the mounting of ordinary silver pictures, even on letter paper, without bending. For this purpose 20 parts of common gelatine were left to swell in 40 parts of water and melted by application of a moderate heat. To this were added 80 parts of alcohol. Although this looks like an impossible feat, it may be accomplished. The alcohol should be added in a heated condition, so as not to increase by too large a difference of temperature the contraction of the parts on the surface of contact. If a solid material is present, the precipitation will take place in the whole mass. For this reason continual stirring is necessary, because precipitated gelatine will not readily dissolve, because the mass coagulates and is poor in water. The alcohol addition depends closely upon the quality of the gelatine, and it is therefore advisable, to test the gelatine and to determine the formula according to the result. The picture, when being mounted, should at once be put into the correct position, as the strong sticking power of the gelatine will not permit much moving. This pasting medium is equally good for glossy and mat pictures. It will keep for an unlimited time if put in small, well-corked bottles, which must be left in the dark.

Translated by
HENRY DIETRICH.

OBITUARY.

THE death is announced in Germany at a late date of Dr. Julius Hauff, well known to the photographic fraternity of this country and abroad in connection with the discovery and manufacture of several developers and developing agents, such as amidol, metol, glycin and adurol. Dr. Hauff's investigations and their application to the practical needs of photography have been of great value in the profession.

TEACHINGS OF DAGUERREOTYPE.

(*Concluded.*)

THIS being the case, the first question was whether any oxygen compound of silver and iodine is formed—such as silver oxide, iodate of silver, or silver oxyiodide? It was found, however, that the clouded film remained perfectly unchanged in ammonia, and no trace of chloride could be obtained by adding hydrochloric acid. Moreover, the opacity could be produced in the complete absence of oxygen in an atmosphere of hydrogen, which, as we have seen, favors it. In this case the opacity occurred distinctly more quickly than it did in air with the same exposure.

If no oxygen compound is formed, Scholl says, we can only conclude that pure silver iodide is present. That this is the case may be shown by heating an exposed plate which is strongly opaque in parts; both the clear and opaque parts turn of a clear deep yellow, which is characteristic of the change from the hexagonal system of crystallization to the regular at temperatures over 146 degrees C. (In repeating this experiment I find that the deep yellow color produced by heating goes off again at once as the plate cools. This is exactly analogous to the deepening of color of pure iodide in the light, and the return to the original color I have already noticed.)

In fixing solutions of sodium thiosulphate or potassium cyanide, the film dissolves equally in the unexposed transparent and exposed opaque parts. (The action of sodium thiosulphate is to make the unexposed parts of the film opaque, just like the exposed parts. Potassium iodide has a somewhat similar effect, ammonium sulphocyanide also, but it seems to dissolve the exposed opaque parts less readily than the transparent parts.)

From these experiments Scholl says we may conclude that the opaque film is formed of pure, mechanically divided silver iodide, and that oxygen plays a catalytic part in advancing the formation of an intermediate substance. He considers the reactions caused by the exposure of the silver iodide to be somewhat as follows:

According to Arrhenius, silver iodide exposed to light is dissociated and its stability strongly affected. For complete decomposition, a substance must be present which can combine either with silver or iodine. In the foregoing case, the silver forms, with the oxygen of the air, a compound, possibly Ag_2O, and the silver iodide will be more easily decomposed by the presence of oxygen. This silver oxide must be again decomposed by light, and the silver set free again forms silver iodide with the free iodine, whereupon the same process can begin all over again.

$$2AgI + O = Ag_2O + 2I = 2AgI + O = \text{etc.}$$

In this way there must be a continual transference of atoms, which, no doubt, is connected with the loosening and clouding of the whole film.

It is unimportant whether Ag O itself or another body easily decomposed in light is formed; the essential point is that oxygen, by forming a compound, favors the complete decomposition of the already dissociated silver iodide, and then there is an immediate return to the original state, and a new formation of the silver iodide originally present.

Iodine must evidently, therefore, act more strongly than oxygen. On account of the greater affinity of silver for iodine than for oxygen, a compound which can be split up by oxygen must be decomposed much more readily by iodine. It is thus easy to understand why the opacity takes place so much more readily the greater the excess of iodine the plate exposed to air contains.

The fact that the images produced by the exposure of this pure iodide to light can be developed by mercury vapor or by silver deposited from an acid pyrogallol developer does not require, according to Scholl, to be attributed to a chemical change in the exposed film, but rather to the roughness of the surface caused by the breaking up of the film in the exposed parts, the rough surface more readily taking the mercury and silver. This agrees with my own observations, but I do not think it applies in all cases.

I have gone somewhat fully into these observations of Scholl's in order to make them clear. Whether his theory is correct I cannot say; but that oxygen, taken either from the surrounding air or from the watery vapor which is always more or less present in it, does play an active part in the decomposition of silver haloids in light, has been proved by H. B. Baker (*Trans. Chem. Soc.* 61, 1892, 728).

From experiments recorded in the *Researches on Light*, Hunt came to the conclusion that the first action of the solar ray is to liberate one-half of the combined halogen (chlorine in the cases recorded, but the conclusions apply equally to iodine and bromine), which is very readily, moisture being present, replaced by oxygen. This absorption of oxygen or its combination with the decomposing chloride he proved by placing some pure silver chloride in a bent tube closed at one end while the other was immersed in distilled water. After some days' exposure the water rose in the tube and contained chlorine, which was shown by the usual precipitate with silver nitrate.

That water is decomposed by the action of light on silver iodide is, I think, shown by the following simple experiment. Some of the brick-red powder of anhydrous superiodized iodide was placed in a tube with distilled water, and then exposed in the sun. After a time it was found covered with little bubbles of gas, most probably oxygen. The iodide became paler in color, though not lemon yellow, and the supernatant watery fluid gave a slight cloudiness to a solution of silver nitrate. By remaining longer in the water, the pale yellow iodide was formed.

Similar little bubbles of gas were observed when precipitated silver was treated with iodine in distilled water and exposed to the sun.

Captain Abney has recorded a similar experiment in which silver iodide was placed in a test tube with a boiled solution of silver nitrate. On exposure to light, bubbles of gas were found collecting in the solid iodide, and proved to be oxygen. From which, he says, we may suppose that the liberated iodine decomposes the water in contact with it (as does chlorine) and produces hydriodic acid and oxygen.

Professor Meldola has also gone into this question in his *Chemistry of Photography*, and seems to think that an oxychloride may be formed by the decomposition of silver chloride by light in presence of watery vapor. This view is confirmed by Baker's recent work, already referred to. From the appearance of the substance produced by the union of silver and iodine under water, and its peculiar olive green color, it is possible that it may be an oxyiodide or a subiodide, and it may be worth more careful examination than I have been able to give it.

In an earlier part of the lecture it was stated that iodine has a very much greater affinity for oxygen than the other halogens have, and so it seems not unlikely that oxygen may produce more marked effects upon iodized silver plates by the action of light than it does with the chloride or bromide.

I have noticed other effects in the opaque parts of these films which seem to be due to the formation of some gaseous product, but further observation is necessary, the tearing up of the film can, however, be readily seen on two plates I have here. Another plate exposed in contact with a gelatine film negative does not show it, but rather a great increase of density.

That there is an evolution of a gaseous product during the exposure to light in contact with air of these superiodized plates is demonstrated by the blister-like appearance visible in the exposed parts. Moreover, on exposing one of these films in contact with a silvered glass plate not only was the surface of the silver darkened in the parts exposed to light through the iodized film, but minute black spots were produced on the silver corresponding exactly with the blisters. The composition of the dark spots remains to be seen, but they were most probably caused by iodine expanding and bursting through the film. This effect has not been noticed by Scholl.

If Scholl's theory of the catalytic action of oxygen be correct, and this action takes place when haloid salts of silver are exposed to light, even without the presence of organic matter, it will probably also take place, but in a much greater degree, when organic matter is present. When oxidation takes place in presence of water or watery vapor Schonbein has shown that peroxide of hydrogen is formed, and, more recently, Sonstadt has traced its presence, when chloride of silver is exposed to sunshine in water (*Proc. Chem. Soc.* 14, 1898, 179). This substance, as we know from Dr. W. J. Russell's recent researches, is capable, even in very small quantities, of producing the developable state of the haloid salts of silver on an ordinary gelatine dry plate. In this way, therefore, we may possibly be able to trace the connection between the effects produced by peroxide of hydrogen vapor and by light upon the haloid salts of silver. Further investigation is, however, required.

I hoped to have been able to say something with regard to the action of light upon the ordinary Daguerreotype plate, and had intended to almost confine myself to the question of the probable nature of the latent and printed-out images upon iodized silver, but, as I went on and my attention was diverted to the points I have brought before you, I have not been able to complete the work I began. I propose therefore, to close my lecture here and defer further consideration of the question till I can work it out at leisure and give the results to the Society in a supplementary paper.

The points I have dealt with are none of them new, but are, I think, of some interest generally, and I hope I may have been able to throw light upon them and carry on the work of my predecessors.

GLEANINGS FROM GERMANY.

By Henry Dietrich.

Dr. R. Neuhauss has Continued his Investigations Upon Lippmann's Process of Color Photography. The working with gelatine emulsion plates proved to be particularly successful, and by adhering strictly to the prescription a failure was almost an impossibility. An essential simplification of producing the plates was arrived at by washing the emulsion before flowing, as is always the case in the production of highly sensitive dry plates. He obtained in this way an emulsion, that will keep from two to three weeks in a cool place without any after-ripening worth mentioning. Not until 50 degrees C. were reached did it become cloudy by after-ripening. Regard should be had, that part of the coloring matter that was added to the emulsion, is removed by washing; a pretty good quantity of coloring matter should, therefore, be used. For coloring the emulsion, Dr. Neuhauss applied successfully a compound of cyanine with erythrosine and glycine red, which gave a real panchromatic plate. To each 100 cubic centimeters of emulsion he applied:

Alcoholic cyanine solution, 1:500..................	3 cubic centimeters.
" erythrosine solution, 1:500	2 "
" solution of glycine red (saturated)......	10 "

With emulsions colored in this way, under normal light conditions, the several colors, from red to violet, will appear in spectrum pictures as well as compound color pictures, completely uniform.

Diapositives are generally made in the printing frame, by exposing a dry plate under a negative to artificial light. E. Ammann calls attention to a method which is said to furnish the handsomest results. The principal factor in this method is the uniform illumination without any reflection. The exposure is made in the camera by focusing first upon a white paper surface, over which a dark thread has been fastened. The picture of the thread is then put out of focus and the thread is removed. In this way one is sure that no marks of paper grain will show. A dry plate is then put into the plateholder, film side up, and following this the negative, film side down; the holder is closed, put into the camera and exposed with largest diaphragm. The diapositive is then developed.

A good ink for etching glass is obtained by mixing 10 parts fluoride of ammonia with 40 parts sulphate of barium, and mixing the two salts with sulphuric acid. The salts are previously well mixed in a leaden vessel. The following method is also good: Equal parts of fluoride of ammonia and sulphate of barium are dissolved in fluoric acid. The writing is done with an ordinary steel pen. After half an hour the written surface is washed with water.

Concentrated Developer for Bromide of Silver Paper.—For the development of bromide of silver paper a diluted organic developer is generally applied, and the following formula, which furnishes very good tones, appears to be the most suitable:

Sulphite of soda	90 grams.
Amidol	15 "
Water	350 "

For use take·

Concentrated developer	45 cubic centimeters.
Bromide of potassium solution (10 per cent.)	8 drops.
Water	180 cubic centimeters.

Removing the Oil Color from Brushes.—It is usual to clean the brushes hardened by varnish or oil-paint with hot lye; and the brushes are frequently spoiled or destroyed by this operation. Amylacetate has proven to be a very good medium for that purpose, and can be employed without any risk of damaging the brush.

PRIZE WINNERS AT THE INDIANA CONVENTION.

GRAND.—C. Heimberger & Son, New Albany. Genre—First, Walter L. Dalby, Richmond; second, C. W. Miner, Fort Wayne.

Art Lighting.—First, T. J. Grigson, Terre Haute; second, V. B. Hardy, Frankfort.

Miniature.—First, W. B. Cuyler, Greenfield; second, George S. Holloway, Terre Haute.

Specialties.—First, W. E. Vilmer, Crown Point; second, M. F Rafert, Indianapolis.

Towns of Three Thousand or Less Population.—First, W. E. Vilmer, Crown Point; second, Otto White, North Vernon.

Towns of Five Thousand.—First, J. O. Commack, Greencastle; second, J. H. Thompson, Franklin.

Retouching.—First, L. C. Willis, Crawfordsville; second, Albert Smelser, Marion.

Special.—First, W. F. Schrieber, Chicago; second, Knaffl Brothers, Knoxville, Tenn.; third, W. H. Morris, Akron, O.

Cabinet.—First, W. Heimberger & Son, New Albany.

Illinois and Kentucky.—First, N. G. Couper, Paris, Ill.

Circulating Picture.—First, C. R. Reeves, Anderson.

THE MULTITUDE OF PROOFS.*

"THREE finished proofs submitted with each order for 1 dozen cabinets." Such or similar is the announcement that appears in so many photographers' price-lists nowadays. Does the practice tend to enhance the public appreciation of their photographs, or the reverse?

Let us try to imagine Reynolds or Millais, for instance, painting half a dozen different portraits of their sitters, and giving them their choice of the best.

Is photography so low down in the scale of things artistic that what would seem absurd and irrational in one case is quite the correct thing in the other? A portrait is a portrait, a work of art, be it on canvas or in carbon tissue, on porcelain or in platinotype, and needless duplication merely tends to vulgarize and lower its value.

"Oh, but," photographers say, "the sitters are easier to please if they have three or four proofs to choose from, when, perhaps, one only would prove unsatisfactory."

Why so, if it is the best one? An artist will make, perhaps, many sketches and studies before he completes his finished work; so, also, may his brother of the camera take several negatives, only showing the print from the one he considers most likely to satisfy his critical and exacting customers.

It is a settled delusion with some that several proofs will obtain a larger order than a single one. Of course, if this were so, the matter is settled, for we cannot afford to ignore the commercial aspect of the question. But is it really so? The sitter, presumably, does not burden himself with more photographs than he or she actually requires, and is, on the whole, more likely to loosen his purse-strings over one well-admired portrait than two or three of rival and clashing merits. Do we not all know the state of helpless despair some people are reduced to when they have to decide which proof to sanction? The Judgment of Paris were trivial in comparison. Friends and relatives are anxiously canvassed, and, perhaps, even the photographer's own preference sought for, though not received with too much reverence. Finally, in all probability, the one not particularly cared for by the sitter is chosen, with lurking misgivings, in deference to a majority of other opinions, and that order is not so large as it might have been.

In the National Gallery may be seen two portraits of Cardinal Richelieu, in slightly different positions, framed together. Either of them is a masterpiece, instinct with character and vitality, showing perfect technique in every inch; and yet, seeing them together, one is conscious of a vague sense of disappointment. If we hold up a hand, so as to block out one of the pictures from view, the immediate gain of the other in interest and effect is surprising. The moral is sufficiently obvious and easily applied. Not only do two nearly similar effects in juxtaposition clash with and disturb each other, but one of them, also, is always in some single respect better than the other, and *vice versa*, and so they each serve only to point out their neighbor's deficiencies instead of emphasizing its merits.

But *revenons à nos moutons*. Let us suppose we have three proofs of the same individual, varying but slightly in position and lighting, it is almost certain that one of them will do more justice, for instance, to the sitter's eyes, another has not such expressive optics, but the nose is pronounced "just lovely," while the third has got such a nice mouth that it would take honors easily, only "the eyes and nose are not so nice as the others." The result is probably not quite so satisfactory from a purely commercial point of view as could have been wished; indeed, the unfortunate photographer will most likely be required to produce, after a resitting, yet another proof that shall combine the good points of all the others, nearly always an impossible task.

Yet another argument against a multitude of proofs is the large amount of extra work they involve, and the inevitable necessity, in so many cases, of "rushing" the retouching and finishing. Be it artistic or not, there is no question that the amount and quality of the penciling on the negative has a great influence on the sitter's mind where all else may fail to attract his notice. Now, where there are stacks of negatives to be got off post haste, how can the unfortunate knight of the pencil be expected to devote too much time to each? Here is the genesis of most of the rough and hurried-looking finishing of to-day. How much more sensible it would be to do less and do it better! Is not the real secret of business success to give the best possible value to our clients, not in quantity but in quality? The by no means undiscriminating public soon learns this palpable fact, and gives its patronage accordingly to the man who has the sense to act on it.

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* By A. Lockett, in *British Journal of Photography.*

The question of time also crops up in another direction. This is an era of sharpness and promptitude; our customers expect their proofs within a few days, and photographers themselves best know how often this fond hope is perforce disappointed. Perhaps enough has already been said to indicate at least one of the causes of delay, if not the principal and the means of its avoidance. "Would you believe," said a lady to me once, "So and So has actually kept me waiting more than three weeks for my photos?" "Ah, madam," I replied, "how many proofs did you have?"

Photographers are such a conservative race, ever moving in a time-honored groove, doing what their grandfathers did before them, and slavishly copying one another's methods, or perhaps the system complained of would not be so prevalent. "Oh!" they say, "A or B do so and so, and it pays them. Therefore, of a certainty, it will be the best thing for us to do. And, accordingly, they do it, and wonder dolefully why business is not what it used to be, never seeming to suspect for a moment that perhaps their own lack of originality and ability to adapt themselves to the ever-changing hour is principally to blame.

Regarding the question from a very bald and mercenary point of view, to give many proofs undeniably increases expenses at first hand, and reduces profits proportionately. I once heard a well-known man admit that, other things remaining the same, he would increase his turn-over at least 10 per cent. by only giving one proof to each sitter, and a little calculation will show that, if anything, he rather under-estimated the result of the suggested change, for it is evident that less than half the former amount of retouching would have to be done, one-sixth of the printing would be saved, to say nothing of the gain in time and other things. And, as we must not selfishly forget the interests of the army of photographic assistants, they need not fear any possible loss of employment, for public appreciation of better work would stimulate business; besides which, no doubt, greater comfort and better conditions of labor would soon probably follow, to their general benefit.

Why is it that photographs are regarded with such slight respect as compared with paintings or engravings? Is not the reason obvious? It is not merely that they do not approach so high an artistic standard, nor that they are more cheaply and easily produced; it is mainly because we have made them too plentiful and commonplace, and have destroyed the public reverence for what we ourselves treat so lightly and they obtain with so little trouble, for it is a pretty universal weakness of humanity to value things in inverse ratio to the ease with which they are procured, on the principle that forbidden fruits are sweetest.

The practice of giving several rough or unfinished proofs does not deserve so severe a condemnation as that we have been considering, but must, at least, be described as risky and impolitic, for the generality of sitters are never greatly impressed with their counterfeit presentments in the state of fearless realism that the camera gives us before the gentle and refining influence of the retoucher has made amends for Nature's deficiencies. What even our clients themselves would probably consider the most sensible and practical procedure, if appealed to, is to take several negatives, with all due care and consideration, and, selecting the best, devote all our artistic and technical skill to obtaining one satisfactory picture from it. How much more pleasure we should take in our work, and what a gratifying sense of having produced something worth keeping would be our reward! More immediate and tangible results, in the shape of increased receipts and reputation, would of a certainty follow in the wake of what, after all, as merely sentimental considerations, we could not afford to give too much attention to in a materialistic and profit-seeking age.

TONING LANTERN SLIDES. *

THE tone or color of a lantern slide, as in an ordinary print, often has a great influence on the effect which the picture is intended to convey to the observer's mind. A red or brown tone imparts a sense of warmth to the observer, whilst a black or blue color gives one an idea of cold; and so we find that, to a large extent, by means of the color of the finished work alone, a skillful worker can convey ideas to the observer. It behooves one, therefore, to always see that the idea conveyed by the tone is in agreement with the subject of the picture, and helping on towards the total result instead of detracting from the value of the whole, as it would of necessity do if it were not in accord with the general idea of the photograph. For instance, a snow scene toned to a reddish brown would obviously be wrong and inartistic, since the warm impression given by the brown tone is in direct opposition to the wintry scene depicted in the view.

It is not to be wondered at, then, that methods are now known for producing a large variety of colors and tints. Reds, greens, yellows and blues are all within the power of the worker, both in prints and lantern slides, but are more generally used in the latter case than in the former. Prints in red or brown, or various tints of these two colors, are common enough; but in the cases of the other colors mentioned, their use is more prevalent in slide work than in prints. One good reason, also, for the toning of lantern slides such a number of colors is that they then help to give a little variety to what would otherwise often be a long succession of black and white studies.

I must warn beginners, however, from thinking that a tone is the same as a stain. A stain is a color imparted to the coating holding the deposit—in the case of amateurs, generally gelatine. A tone, however, is a tint imparted to the deposit, leaving the clear parts free from color. For instance, if you immerse a developed and fixed lantern slide into a solution of some aniline dye, you will find that, whereas before you started you had a picture in black on a white ground, now you have a picture in black on a blue ground, or a ground of whatever color was used to stain the plate. If, however, instead of putting it into a plain dyeing solution, we put it into a bath of, say, uranium intensifier, we shall find that the actual substance of the deposit is changed from a black to a reddish brown. This is the process known as toning.

The brown tone is a very favorite one with lantern-slide makers, and one which gives a welcome change in a long series of slides mostly of a black color. It is also one of the easiest tones to produce. One can either use plates of the "Alpha" class, and so obtain the desired color on developing, or it can be produced by after-treatment. It may be that the photographer can decide before starting what color will best suit his slides. Then, of course, the Alpha plates can be used; but if he has got a black slide, and afterwards determines that a brown tone would be more appropriate, he can alter the color of the deposit on the black slide to the requisite tint by one of the following methods of after-treatment.

One of the commonest is to bleach in the ordinary bleaching bath of mercuric chloride and ammonium chloride, and then blacken with potassium sulphide (35 grains to the ounce). There seems to be a great deal of difference of opinion as to whether the tones obtained by this method are permanent or not, some photographers saying that, after years of keeping, the slides show no signs whatever of deterioration; whilst others contend that the deposit obtained, being partly composed of mercury, it is not permanent, and that after a year or two the slide will fade. The writer, however, is inclined to favor the first-mentioned contention, as, so far as he can see, no change has taken place in some of his plates treated with this mercury solution years ago. One thing, however, is specially needful when toning slides, and that is, to be perfectly certain before starting that there are no traces of hypo left in the film. This may seem needless repetition of old advice, but it still seems as if some amateurs were ignorant of it, judging from the slides one sometimes sees.

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* By A. A. M., in *The Amateur Photographer.*

If preferred, the slide can be toned in an uranium intensifying bath; but, of course, in this case it must be fairly thin, or else the finished slide will be unduly dense. A good tone is given by the following bath:

Potassium ferricyanide	10 grains.
Uranium nitrate	10 "
Acetic acid	4 drams.
Water	10 ounces.

The slide is immersed in this solution until it has gone slightly beyond the required tint, when it is taken out and carefully washed. This washing must not be done in a strong current of water, as the red uranium ferricyanide is soluble in water and therefore if we wish it we can by this means take the red color completely out. The washing should only be carried on till the yellow color in the high lights is discharged.

The brown tone obtained by this process can be changed to a green by immersing the slide in a weak solution of ferric chloride, acidulated with hydrochloric acid. If, after obtaining this tint, the photographer is not satisfied with it, he has simply to put the slide in a weak solution of potassium cyanide, and the color is discharged.

Red tones can be obtained by the use of a copper toning bath. Take, say, 1 ounce of fairly strong copper sulphate solution, and add to it a solution of potassium ferricyanide till no more precipitate is thrown down. Now add to this mixture just sufficient 10 per cent. solution of potassium oxalate to dissolve the precipitate, and leave a clear solution. This is your toning bath. The slide is immersed in this till it is of the required tint, and it is then taken out and treated with a weak solution of ammonia to clear the whites.

If, instead of using copper sulphate in the preparation of the bath, we use a solution of ferric chloride, a bath will be obtained which will yield blue tones instead of red.

But by far the easiest way of obtaining a variety of tones in lantern slides is to make them by the carbon process. Here you can start with a pigmented tissue of whatever color you require, and therefore you are certain before starting as to the tone of the finished slide. The tissue is manufactured in almost every color, and is easily obtainable and simple to work. It is, moreover, permanent, and thus it can be claimed to be one of the best processes extant for the making of lantern slides.

A LANDSCAPE NEGATIVE*

It may be difficult, especially for the beginner, to realize that even when skill has been acquired in making good negatives that they need any serious dodging when printing from them. Yet, probably, no landscape negative has ever been made which may not, by skillful manipulation, be made to render a far better translation of the subject than if simply printed from straight away, without giving it such further attention as is necessary to avoid under, or over, printing. When, however, attention to this matter is given, and control over the positive result exercised, it is soon evident why so many of our front-rank picture-makers prefer to make their negatives as thin and soft as the printing process they employ will allow. It enables personal attention to each print being given, without having to stand over it an undue time; and once it is realized how much alteration may be made in a print, from any one negative, simply by allowing some parts to be further acted on by light, and by stopping others at various stages, it becomes almost impossible to afterwards rest content, when doing serious work, with a plain, uncontrolled result, however good the negative may have appeared to be.

This introduction of the personal element into printing, either for exhibition or other purposes, renders it necessary for each one to produce his own negative of such a quality as allows him to get the nearest approach to an ideal, with the least natural resistance; and so we find each skilled worker making an entirely different quality of negative from his fellows, and yet each will produce, the one from a ghost another from moderately strong negatives, results which appeal with equal force when hung on some exhibition wall. But change the negatives, and let them be printed by another hand than those who made them, and see how different a state of things will be brought about. Nor will the results produced be nearly so successful; and we can but realize from this the futility of setting any one standard for the quality of negatives. They are but personal tools after all, and must be prepared in accordance with individual judgment and requirements.

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* By W. Thomas, F. R. P. S., in *The Amateur Photographer*.

When development of the exposed plate is taking place, a good deal of what has been lately described as "tinkering with the developer" may be brought into play, and the printing values of the resulting negative can—and of this, I hold, there exists no possible doubt—be varied to a considerable extent. Light action on a sensitive film is undoubtedly a fixed factor, and all the development in the world, when pushed to its fullest extent, cannot give more than has been impressed during the exposure; but, short of that, almost any variation may be brought about by using various strengths of the constituents. Contrasts may be forced or flattened, as desirable, and, given, six plates exposed on one subject, each having received the same amount of light action, six entirely different kinds of negatives may be produced, from which prints, when made, would show widely different results.

The idea that, given a certain action of light on sensitive salts, we have no power to completely control the results, or cannot practically make them just what we desire, seems a fallacy which every day experience abundantly disproves. Theory and laboratory experiment are useful, nay, needful, for their own purposes, but of little use in ordinary negative making, when these are made to be used in the production of landscape pictures. How would some of those masterly Alpine photographs of Captain Abney's look had the negatives been produced with developers of full normal strength? I fancy the wide range of gradations now seen in them, running from black pine forests to glittering expanses of snow, would have fared badly.

We should have been treated to black and white, pure and simple, in place of the long, gradual range of tender greys, which his photographs in this class always exhibit: and so it is with other clever photographers. That a developer, however concocted, cannot select any particular step in the scale, and act solely on that, is a fact every one but the merest beginner is aware of, just as it cannot jump, or miss any one step, and take up the next to it. Its action must necessarily be mechanical, and pass regularly, stage by stage, from the lightest to the darkest; but upon the manner in which that action is made to take place depends the quality of the result; and just to the extent our skill enables us to control development depends the extent it will be needful to tinker with the negative, by means of pencil, stump, varnish, or tracing paper, before success may be attained, when printing comes to be undertaken.

Perhaps one of the most interesting experiments in landscape work is to see how many different effects may be obtained from a negative by simply controlling the printing of it, and shading down passages of the print afterwards, by using a cloth or folded paper, and introducing, if needed, a cloud from another negative. The amount of play one has by these means appears truly wonderful when first exercised; and when other well-known methods of doctoring the negative itself are put into use, and skilfully carried through, one fancied restriction after another is found to disappear, and what has happily been described as "painting by light" seems far nearer being a living reality than many at first sight might feel disposed to allow.

Spending a few days, last Whitsuntide, at a favorite resort in Essex, we were practically kept indoors twenty-four hours by incessant rain, and landscape photography might have seemed to many impossible, yet during one short lull a plate was exposed, with the intention of seeing how far one might alter the general effect by purely photographic means.

The whole landscape, look which way we might, was hazy with damp mist, distant objects being partially obscured; and had they been photographed in the ordinary manner, and the plate treated normally during development, would, without doubt, have been buried in the negative, and lost entirely when printed. To avoid this, and obtain a negative which would give a print suggesting a more pleasing aspect of things, a slow, isochromatic plate was used, with a yellow screen of medium tint, a full exposure given, and a fairly strong pyro developer used for a while; then, when the higher lights seemed well out, a developer weaker in pyro, but with normal amount of alkalin, was substituted, and the work finished in it. In this way a different result was obtained, and, looking at the print, little evidence is found to suggest it was taken under such dismal atmospheric conditions as existed at the time.

Taking this negative just as it stood, and printing a rough trial proof, then introducing clouds from another negative, and tinting down here and there light patches which attracted undue attention, by exposing to light, and covering up those portions already dark enough, some slight resemblance to the picture I had all along in mind to produce was obtained, full of faults, but, as a sketch to guide one later if it be thought worth the doing, it is sufficiently near to prove of considerable assistance. Some small patches on the negative need reducing, and here and there a shadow strengthening. The first a few touches of the knife will remedy, and for the latter, tracing paper stretched on the back of the negative will allow of working on, with powdered lead, to any extent which may be required.

PRINTING IN NATURAL COLORS.*

PROFESSOR NAMIAS publishes an interesting method of printing pictures in colors for which purpose the gum-print process has usually been applied, but Professor Namias takes as light-sensitive solutions mixtures of red prussiate of potassium with iron, lead and copper salts, respectively, which in light give blue, yellow and red precipitates. The yellow picture is first printed, by coating the paper with a solution of ferri cyanide of potassium and acetate of lead. If the solution is mixed with about 5 per cent. of lactic acid, the sensitiveness is increased. The best method is to prepare the paper with a saturated solution of lactate of lead, to which have been added 10 per cent. of ferrid cyanide of potassium. After exposure the paper is treated with a chromate or bichromate, which gives to the picture a handsome yellow tone, which, with ammonia, passes into orange.

Upon the yellow picture the blue picture is printed by means of the ordinary cyanotype process.

A completely satisfactory method for producing the red picture has not been found yet. Copper ferro-cyanide is red, but it has not the correct tone, and cannot be produced in sufficient quantity by simple light action. Lactate of copper, produced by dissolving carbonate of copper in a small excess of lactic acid, has proven to be the best, however. A 15 per cent. solution of this is applied in connection with a 10 per cent. ferrid cyanide of potassium solution. The mixture is very light-sensitive, prints with a pink color, which during washing with water passes into pure red. The best fixing medium is a solution of carbonate of ammonia. The red picture must be printed after the blue picture, as the iron salts used in the cyanotype process would decompose the copper salt. Better results were obtained by applying a sensitizing liquid of ferric cyanide and a lead salt, as above described, and immersing of the paper in a diluted solution of acidified sulphate, or acetate of copper with regard to the toning of the printed picture.

Translated by HENRY DIETRICH.

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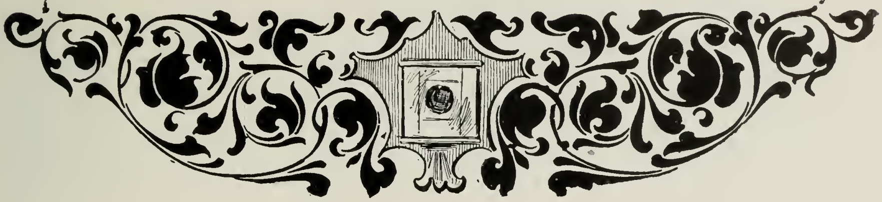
* From *Photographisches Centralblatt.*

SOCIETIES



AT a meeting held on February 26th, the Little Rock (Ark.) Camera Club was organized and the following officers were elected: John Leifer, President; Mrs. F. W. Rawles, Vice-President; John A. Jungkind, Secretary, and Miss Myra Thomas, Treasurer.

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The Central Cycle and Camera Club, of Baltimore, Md., held its annual meeting in February and elected the following officers: Chas. E. Harrison, President; W. J. Franz, Secretary; C. F. Coath, Treasurer.

* * *

The Irvington Art and Camera Club, of Irvington, N. J., held its annual meeting on March 3d, and elected the following officers: John Gray, President; Frank Morrell, Vice-President; W. H. Allen, Secretary; Thomas S. Osborne, Treasurer.

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The Trenton (N. J.) Photographic Society held its annual meeting early in February and elected the following officers: Samuel Webber, President; Dr. J. I. Woolverton, Vice-President; Grant Castner, Secretary; H. Holden, Treasurer. After business matters had been attended to, the remainder of the evening was devoted to sociability, and all had an enjoyable time. The Club is in a flourishing condition, and anticipates a prosperous year.

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The annual meeting of the Utica (N. Y.) Camera Club was held on the evening of February 16th, and officers for the ensuing year were elected as follows: W. H. Divine, President; H. H. Wells, Vice-President; M. C. Brown, Secretary. The report for the past year showed that the Club is in a flourishing condition, financially and in general.

* * *

The Syracuse (N. Y.) Camera Club will hold a competitive print exhibition from April 10th to 14th, inclusive. Awards of silver and bronze medals and white ribbons will be made as first, second and third, respectively, and prints must be in the hands of the Committee on or before April 6th. Full particulars and entry blanks may be obtained from Mr. H. D. Barto, or any member of the Committee.

* * *

The Brooklyn Camerists, started in January last, held an organization meeting on February 15th and completed their routine work by electing C. E. Hebbard, President; D. J. Howells, Vice-President; E. M. Healy, Treasurer, and F. C. Zeigler, Secretary. All amateurs are invited to join the Camerists. There will be no initiation fee until the membership of the society reaches fifty. Dues, 25 cents a month. All communications should be addressed to the Secretary, 116 Prospect avenue, Windsor Terrace, Brooklyn.

DEUTSCHER Photographen Kalender for 1900, published by K. Schwier, editor of the *Deutsche Photographen Zeitung*. It is an interesting little year book, in two volumes, small octavo; and contains, besides a number of formulas for the various photographic processes, a good selection of valuable statistical matter relative to the German Empire, and other countries.

Formulas, Recettes et Tables pour la Photographie, translated from the German by G. Braun fils, and published by Gauthier Villars, Paris. A compilation of formulas of every branch of photography by Dr. J. M. Eder. We know of no other publication in the French language offering so many original and carefully selected formulas in condensed form to the reader, and the work should be welcomed by every French photographer.

Manual Pratique de Photographie au Charbon, by Edouard Belin, Paris. As the title indicates, is a manual on the carbon process. The writer gives a detailed description of the same, with all its latest improvements, and those who are familiar with the French language can obtain much good and useful information from the book.

We were last week shown a series of new embossed imprints, which the A. M. Collins Manufacturing Company has just originated. They are a rather radical departure from some of those in former use, being smaller and embodying shield and crest designs of exceeding attractiveness. The modern photographer has found it profitable to become critical regarding the appearance of the imprints which he uses on his mounts, and to the most critical of modern photographers we recommend the new embossed imprints of the Collins Manufacturing Company. Like Collins Card Mounts, they have an air of aristocratic exclusiveness that has come to be considered a valuable asset.

Ferric and Heliographic Processes, by George E. Brown, F. I. C., is just received from the press of Dawbarn & Ward, Ltd,, of London, and is an important addition to photographic literature, particularly as it applies to the operations of blue printing and similar processes in the hands of draughtsmen, engineers, architects and those requiring a printing paper of easy manipulation, capable of being used in connection with either negatives or tracings. The book, as its introduction states, is intended to serve two classes; first, the amateur photographer with a taste for experiment; and, second, architects, engineers, draughtsman, surveyors and those who find the reproduction of tracings and drawings a matter of necessity. This little work is very carefully edited and contains illustrations of various processes, and diagrams of the necessary accessories for their production. It is bound in canvas, stiff covers, contains 130 pages, and may be obtained of our publishers at a price of $1.

Another important addition to the literature of the blue print comes to hand in No. 10 of the first volume of the *Photo Miniature*, published by Tennant & Ward, which is devoted to the blue print and its variations, price 25 cents. This number, like its predecessors, is an extremely terse and readable work, and treats wholly upon the blue print in its various phases, and is one which any photographer will do well to have at his hand.

We have just received from the Rochester Optical Company an advance number of its *Premo Camera* catalogue for 1900, which is, if anything, more perfect in its get-up and general appearance than any that have preceded it. It is profusely illustrated with capital half-tone engravings from work made by the Premo, of various sizes and kinds, which go to show the excellent qualities of the outfit it describes. Copies may be had of our publishers on request.

LIBRARY
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Photograph by DANA, New York and Brooklyn.

ANTHONY'S
Photographic Bulletin.

EDITORS:

PROF. CHARLES F. CHANDLER, PH.D., LL.D.
W. I. SCANDLIN.

VOL. XXXI. MAY, 1900. No. 5.

A WORK OF THE HOUR.

IT is, we think, a fact that the most important advances in photography during the last few years are to be noted along the line of astronomical research ; by its aid a vast amount of information has been and is being acquired throughout the world. Immense sums of money in the aggregate are expended every year by the colleges and scientific institutions of this and other countries, that their photographic equipments may be kept up to date, and of a quality to enable the special work undertaken to be carried out with skill and accuracy.

Special investigations of this nature are instrumental in bringing into prominence from time to time the work of some patient experimentor who may perhaps for years have remained unnoticed or undiscovered, but who may nevertheless some day find himself famous, and live to see his labor appreciated at its true worth.

It will be interesting in this connection to note the outcome of the photographic work projected for recording the various phases of the approaching total eclipse of the sun which will be visible over a large portion of the southern section of this country, and for which many expeditions have been formed and expensive preparations made. The importance of this eclipse to the scientific world can hardly be overestimated, as it will be the first to be studied for a long number of years, and as during the interval since the last eclipse great progress has been made in apparatus and methods of observation.

An important phase of this subject, as it applies to the ordinary professional or to the advanced amateur photographer, lies in the fact that either of them has it in his power, with the instruments at

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his command, to add his contribution and to aid the scientists in their observations of the event. It is not absolutely necessary for this work that the operator should have special mountings for his instruments, but much may be done with the regular outfit at hand. In another part of this number will be found a series of carefully prepared suggestions by an eminent authority, and it is expected that a large amount of work will be done in recording this event by the rank and file of photographers in all parts of the country where it may be visible. With the suggestions offered and the information obtainable important results may be looked for, and it is to be hoped that all who can do so will lend their aid on this occasion. The BULLETIN will be glad to know of and to record any successful efforts in this direction by its readers at any time.

OBITUARY.

MR. JOHN HAWORTH, of Philadelphia, one of the oldest dealers in photographic supplies in this country, and a man who was well and widely known throughout the profession, died at his home on March 20th at the advanced age of seventy-four years. Mr. Haworth was born in England, but came to this country with his parents in infancy. When a young man he opened a daguerreotype establishment in Pittsburgh, where he remained for fifteen years, returning to Philadelphia in 1868, where he opened a store for photographic supplies on Arch street, which has continued in the same locality to the present time.

* * *

MR. MINER C. WOOD, Secretary and Treasurer of the Ray Camera Company, died at Thomasville, Ga., late in March, where he had gone in the hope of recovering his failing health. Mr. Wood, while only thirty years of age, was an active, able and conscientious business man and a prominent mason.

* * *

MR. BENJAMIN T. CRANSTON, head of the firm of Cranston & Co., died at his home in Norwich, Conn., on the 19th of March at the age of fifty-four years. Although Mr. Cranston had not been in good health for some years, his death was not expected, and came as the result of an attack of pneumonia, after an illness of only ten days.

Mr. Cranston leaves a widow, and two sons who have been associated with him in the photographic supply business since 1887.

THE fourth annual convention of the Photographic Association of New England is announced to be held in Copley Hall, Boston, September 12th, 13th and 14th next, and the Executive Committee is hard at work to make it the most beneficial convention in the history of the Association. The plan proposed, includes a series of practical demonstrations of posing and lighting by some of the best men of the profession.

Interest is manifested by many outside the New England States, and, from present indications, a large and successful meeting may be expected.

Items of Interest

THOSE photographers who are especially interested in the making of cloud negatives are preparing to take advantage of the conditions that are now at hand, remembering that some of the finest cloud effects of the year may be looked for in the early spring, and again in the fall.

This is a branch of photography that holds great attractions for many, and the results to be obtained in it are often very beautiful.

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It is said that the coarseness and granularity so often noticed in enlargements, which is due to the enlargement of the grain of the original negative, may be overcome to a great degree by throwing it slightly out of focus when making the enlargement. Of course it must be only very slightly out, or the effect will be bad, but those who have tried it say that when carefully worked the result is a decided improvement over the method of tacky sharpness of focus insisted on by many.

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The Professional Photographers of Ohio and Michigan have formed a joint association under the name of the Ohio-Michigan Photographers' Association, and at a recent meeting of a representative body from each State, organized and elected the following officers: Presinent, C. M. Hayes, Detroit; Vice-President for Michigan, J. F. Rentschler, of Ann Arbor; Vice-President for Ohio, C. S. Bateman, Norwalk; Secretary, A. L. Bowersox, Dayton; Treasurer, W. L. Smith, St. Mary's. The place of meeting and date of Convention is under consideration, and will be announced later.

* * *

The Professional Photographers of Maine are waking up to the necessity of State Association, and a meeting has been called for June 12th at Portland for the purpose of perfecting plans and organizing. Interest throughout the State is active. A large and representative meeting is anticipated. Success to the coming Photographers' Association of Maine!

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According to latest reports, hand cameras may be used at the Paris Exposition in and about the Exposition grounds at all hours on the payment of a fee of 25 francs, or $5 for each instrument. Cameras set up on tripods will only be allowed until one o'clock each day, and must pay a fee of 1,000 francs (about $200) for the season. No exhibited article may be photographed without the written permission of the exhibitor, and no photographer will be allowed to interfere with the free circulation of the crowds. In addition to the above fees, owners of cameras and their assistants must pay regular admission to the grounds.

The work of Mr. Ernest Seton Thompson, naturalist, artist and animal-lover, demonstrates beyond question the value of the camera in the hands of the scientist who desires pictorial records of the subjects under investigation, and calls attention to its use by sportsmen and tourists in the wilds of our own and other countries, while they are still in their freshness, and before the life which inhabits them has become changed in its habits and surroundings by the approach of civilization.

Mr. Thompson's studies, descriptions and illustrations in this most fascinating line of work are doing much to reveal the habits and surroundings of animal life under its natural conditions, and the camera is an important factor in his work. The Kearton Brothers in England, Mr. E. G. Tabor, who has contributed to recent volumes of the "International Annual," and others, are collecting invaluable data in this way, but the field is so wide that there is room for many more. A more delightful field of special application than this can scarcely be imagined.

The Chicago Society of Amateur Photographers is desirous of adding to its library, books and magazines treating of photographic and kindred subjects. Bound volumes are preferred, and the librarian of the Club will be glad to hear from anyone who may have such literature to dispose of.

In the article on diapositives, on page 120 of the April Bulletin, the translation reads, "a dry plate is then put into the plate holder, film side up, following this the negative, film side down." Our attention has been called to the matter, and we hasten to correct the sentence, which should be reversed to read as follows: First the negative, film side up, and then the dry plate, film side down.

The first annual exhibition of the Press Artists' League, which is to be held in the East Parlor of the Waldorf-Astoria during the week beginning Monday, May 14th, will be unique in the annals of art exhibitions in this country. Its primary object was to show the originals of cartoons, portraits, caricatures and general work of the newspaper artists employed by the leading newspapers of New York City, and the first date set was April 16th. But the projectors builded better than they knew, for the news traveled rapidly, and the committee soon found themselves in possession of a wealth of good material that could not be possibly put into effective frames and properly catalogued in the allotted time. There are in all about five thousand sketches in black and white, and a large number of colored drawings and sketches in water-colors and oils. The artists represented are not by any means limited to those whose field is solely newspaper work. Illustrators of books and of weekly and monthly periodicals have also a place in the scheme, and their originals will be of great interest to collectors and for the purposes of extra-illustration. The general committee of artists who are in charge is composed of Messrs. R. F. Outcault, Homer Davenport, C. G. Bush, Fred. S. Cozzens, Geo. Bleekman, Clare Angell, Ch. Nelan and O. C. Malcolm. The headquarters of the League are at Room 24, World Building.

PORTRAITURE.

By C. M. Hayes.

Read before Fortnightly Club of Detroit, Mich.

LADIES AND GENTLEMEN,—Since the days of Daguerre a certain class of workers of the pot-boiling and meretricious kind have tried to synonomize the creations of the photographic and mechanical arts, but as long as human nature is imperfect and men are created with an uncertainty of touch and with defects, or at least differences, in eyesight and judgment, just so long will the camera and its sensitized plate and lens be the only reliable tools on which the artist can depend for a correct, accurate and faithful portrait. The fundamental basis or essential part of the work must be done with an accuracy and speed which no one of the human race can by himself accomplish, no matter how long or varied his experience may be.

Photography has been, beyond the question of a doubt, a great boon to the race and a blessing in portraiture, and in all other lines, from the fact that it has made it possible to preserve faithful and correct representations of the living which endure even after remorseless time has removed the subject from the earth ; it has made it within the reach of all careful and painstaking students to accomplish this and to-day the only belittling feature of the photographic art is the financial return which must be looked for. There are certain arbitrary principles and conditions of light and shade and even of posing the subject that are absolutely necessary to the production of a good portrait by the artist of the camera. A layman might ask why these are necessary, but he might also ask, with equal propriety, the reason for the inverted image on the ground-glass or the limitation of the focus of the lens, which are alike as arbitrary. The light must be arranged so that the effulgent rays shall fall upon the subject at proper places to give the adequate roundness and definition to the picture and it must be strong enough to make the picture clear and well defined.

I do not believe that any of us really care for or desire a flattering picture ; what we do desire—and this is entirely reasonable—is to be preserved at our best. Faults of the figure, of facial expression, or feature, have no more place in the photograph, as the center of interest and prominent factor, than a man's faults and weakness have in the history of his life or obituary.

An unusually long jaw which, dissected by itself, can be made to draw and rivet the gaze can, as well, be cunningly hidden in the posture and lighting of the picture so that while it is still as Nature made it, it is not thrust forward unduly as the noticeable feature of the likeness. The same can be said of an unusually long neck, or of any other feature which is disproportionate to the contour of the face and yet which must be preserved as a portion of the likeness. These apparent defects, but really distinguishing marks of appearance, can be handled in such a manner that while a natural, easy posture is given to the figure, a correct and faithful representation of the subject is at the same time placed before the patron.

The retoucher has a not unimportant part in the making of a *fin de siècle* portrait, although not to such an extent as in former years, when he retouched the picture to a degree that the likeness was lost, and unnaturalness the result. Even to-day the photographic plate does not take kindly to certain colors, especially the vermilion and the chrome, or any of their different subdivisions.

Ofttimes there are discolorations in the cuticle which are scarcely perceptible to the eyes, but which are magnified by the plate and the lens' sharper sight and fidelity into unpleasant spots upon the face. These spots show in the unretouched photographic production. Now, it seems to me, that if the human eye does not at a glance behold these marring defects, that the retoucher is licensed to work them out to a degree of naturalness, and reduce the magnifying power of the plate to the natural power of the eye. More briefly stated, to make the face as the eye sees it. There are, to be sure, color-sensitive plates, but they lack the qualifications that are most essential to a first-class photograph. In fact, the color-sensitized plates lose more than is gained in using them as against the others.

The whims of the fashionable world, varying as the light summer winds, ofttimes arbitrarily decide that certain things must be done in the finishing of a picture, and these very things work a hardship to the true artist, and make it impossible for him to get as good results as he otherwise would. For instance, a decade or so ago the patrons demanded highly polished work. Everything was sacrificed to obtain the dazzling gloss that fashion then wanted. To-day we are at the other extreme, so much so that the ultra-artistic photographer makes a photograph cold, black and lifeless—a picture out of focus, distorted and hazy, and only that he may get an imitation of old paintings, yellow, back-number wood engravings, or water-soaked etchings. He gets some result, which possesses neither the good qualities of that he strives to imitate, nor yet the best work that advanced science has furnished him tools to obtain.

But out of it all, in the weeding out in the changes and in the sifting of the dross from the gold, we are passing through a stage of experiment and experience that will at length certainly bring us a better photograph than we have ever made. We are to-day witnessing a revival of old processes, of a process twenty-five or thirty years old, which formerly, on account of its cost and the difficulty of manipulation, has been kept in the background, and out of this I look for good. Amateur photography has done much to bring this revival, and the education of the public to this high standard is not only gratifying, but is stimulating to the true artist who works for an appreciative patron. I refer to the carbon process particularly.

An extremely amusing criticism from the pen of a young lady critic came to my notice during an exhibition of a number of pictures about a year ago. We called them water-colors, this class of pictures to which I allude, and the result was brought about by using a light photograph as a base, which was colored in a rough, florid way, so that the photograph itself was not discernible. The effect of color on white paper is much more transparent and clear than when the same color is applied over a photograph. We aim to combine the beauty of a water-color sketch with the fidelity of a photograph, and how far we succeeded in our endeavor is best shown in this critic's own words, for she said, "The very charm of this beautiful work of art is the inaccuracy."

During the early days of photography it is said that the Queen, turning to Chalon, that great miniature artist, said, "Your art is now lost to you," meaning that the photograph would supersede it. His reply was, "No, your Majesty; the photographer cannot flatter." Shades of the prophets! How little Chalon comprehended the future possibilities of photography, whose charm of flattery is so suave and delicate, and whose power to blot out Nature's little defects is more kindly than the rich compliment of the sweet-brogued Hibernian, whose lips have touched the blarney stone itself.

SOME DEVELOPERS COMPARED—EXPERIMENTS AND RESULTS.

By F. C. Lambert.

IN photography, as in most other semi-scientific pursuits, there is a mixture of fact and fable, of imagination and observation. And often the fable is taken for fact, or *vice versa*. For instance, we are told that Smith Brown's developer will get out more detail than will Brown Jones' developer, and so on.

Now a statement of this kind is a dangerous one, because it may mean several slightly, but importantly, different things. It may, in fact, be true and untrue at the same time.

The writer has just been called upon to verify and compare certain statements and effects with regard to some well-known developing formulas.

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To the reader with an open mind the results and observations of these experiments ought not to be without interest, and also be suggestive in actual practice.

The experiments in actual fact ranged over a much wider path than what is now to be set down. So the reader will please regard the following as a condensed account of some of the chief points only, and such as are likely to interest practical workers.

From the same box of plates (of a speed 185 on the Hurter & Driffield system) six are taken and put into dark slides. These six plates are exposed on the same subject and for the same time, the exposure being one second, stop *f*/8.

Month, March; hour, 11 A. M. Fine, but cloudy; dull, diffused light. The blinds of the studio were not touched during the series of exposures. For convenience of after comparisons two very similar sitters, similarly dressed, were used. (The experiments run in series of pairs.) We may then say that the plates, so far as subject and exposure are concerned, are alike and strictly comparable.

The day was cold. Atmospheric temperature of darkroom was observed to be 52 degrees Fahr. The developing solution in each case was warmed up to 70 degrees Fahr., and the dish was first filled with water at 70 degrees Fahr. for a minute. Then, being emptied, the plate was placed in it, and the developer poured on the dry plate, *i. e.*, without any previous soaking. The aim was to produce a series of negatives, which, in the darkroom, to the eye should show the same range of tones, and the same degree of detail in the shadows, and at the same time to retain the same detail printing power in the detail of the white lace drapery.

Two observations in point of time were made with each development, viz., the number of seconds between quickly pouring on the developer and the first distinct manifestation of the white drapery appearing (*i. e.*, the "time of appearance"); and, secondly, the total time taken to bring the negative up to what was judged its best point (*i. e.*, total time of development). These matters can most conveniently be shown in tabular form (see accompanying table):

Developer.	Time of Appearance.	Time of Development.	Ratio.
1. Metol quinol / Caustic alkali	6 seconds	1½ minutes	$\frac{90}{6} = 15$
2. Pyro ammonia	12 "	2 "	$\frac{120}{12} = 10$
3. Pyro metol	15 "	2½ "	$\frac{150}{15} = 10$
4. Metol quinol / Carbonate	20 "	2¾ "	$\frac{165}{20} = 8$
5. Ortol	30 "	2½ "	$\frac{150}{30} = 5$
6. Pyro soda	35 "	3½ "	$\frac{210}{35} = 6$

Some of my readers are probably aware that Mr. Watkins has made some valuable experiments in a somewhat similiar direction.

The relative proportion or ratio of the time of appearance to total time he denominates as the development factor. My own experiments were made without prejudice and purposely before consulting Mr. Watkins' figures. Speaking generally, his and my results agree very fairly well, except so far as ortol is concerned. But on this point, see the prints made from the negatives.

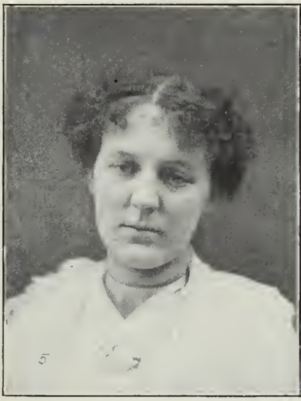
Now to quote the various developing formula that were used.

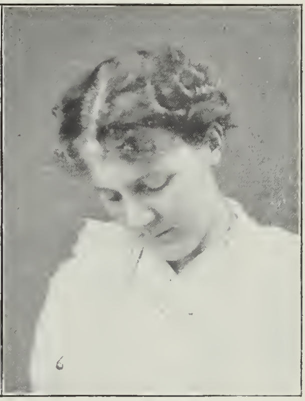
1. *Metol Hydrochinone with Caustic Alkali*:

A.—	Metol	20 grains.
	Hyrochinone	25 "
	Soda sulphite	60 "
	Potassium bromide	7 "
	Water to make a total of	10 ounces.
B.—	Caustic potash	80 grains.
	Water	10 ounces.

Mix equal parts just before using.

This developer brings out all the image in five to ten seconds, but this image is at first very, very thin. The inexperienced worker with this developer is very apt to stop development much too soon. For although the image is all more or less visible very quickly, it takes from one and one-half to two minutes to get enough density for the high lights. The resulting image is free from color and prints cleanly. Where a soft, "full-of-detail" negative is wanted, the development should be stopped somewhat sooner than usual.





2. *Pyro Ammonia*:

A.—	Pyro	1 ounce.
	Potassium metabisulphite	200 grains.
	Water to make	8 ounces.
B.—	Ammonia (.880)	1 ounce.
	Potassium bromide	½ "
	Water to make	4 ounces.

Take 1 dram *A*, plus 1 dram *B* and add water to make total of 4 ounces.

This is a fairly typical, old-fashioned pyro ammonia developer, that still has many warm supporters. Its action is fairly quick, but, like all pyro developers, it gives more or less of a brown-stained negative. This stain, which is not easy to see in a darkroom, prolongs the time of printing and tends to increase contrasts.

3. *Pyro metol.*

A.—Pyro	25	grains.
Metol	25	“
Potassium metabisulphite	60	“
Potassium bromide	10	“
Water to make	10	ounces.
B.—Soda carbonate	2	ounces.
Water to make	10	“

Mix equal parts of *A* and *B* just before using.

This is an energetic developer, quickly bringing out all the detail of the picture, but it takes some little time to gather sufficient printing density. The mixed developer quickly discolors on exposure to the air, as does the pyro ammonia; and also it yields a somewhat green-brown-stained image.

4. *Metol hydrochinone, with carbonate as alkali.*

A.—Metol	50	grains.
Hydrochinone	40	“
Soda sulphite	½	ounce.
Potassium bromide	20	grains.
Water to make	10	ounces.
B.—Soda carbonate	1	ounce.
Soda sulphite	½	“
Water to make	10	ounces.

For a developer take equal parts of *A* and *B*.

The chief points of difference between No. 1 and No. 4 is in the times of image appearance and total time (see table). But the resulting images are practically the same as regards color and gradation.

5. *Ortol.*—It should be noted that ortol is a chemical combination of metol and quinol. We are not surprised that it gives us results therefore very similar to 1 and 4, although with certain differences as regards the rate of its action. The resulting negative is very clean, and is eminently suitable for bromide or printing-out-paper printing.

A.—Ortol	80	grains.
Potassium metabisulphite	40	“
Potassium bromide	10	“
Water to make	10	ounces.
B.—Soda carbonate	1	ounce.
Soda sulphite	1	“
Water to make	10	ounces.

For a developer take equal parts of *A* and *B*.

The image appears in thirty to thirty-five seconds, and development goes on very steadily. For a total time two and one-half minutes is rather short, except for a decidedly delicate negative, and three to three and one-half minutes will be found about right for all-round general work.

It may be noted that developers 1, 4 and 5 may be used for, say, four or five plates if developed one after the other. The writer has used the same lot of ortol developer for eight, and even ten, plates, but its action after use, say, four or five times, becomes inconveniently slow, and staining of the gelatine and of the fingers has to be thought of.

Of course, when the time of appearance gets longer we must proportionately increase the total time of development. Hence one of the uses of the ratio number in last column. In the case of ortol, this might properly be increased from 5 to 7.

6. *Pyro Soda.*—The formula in this case is comparable with No. 2.

A.—Pyro solution as in No. 2.

B.—Soda sulphite	1 ounce.
Soda carbonate	3 ounces.
Potassium bromide	15 grains.
Water to make	10 ounces.

To mix a developer, take 1 dram of *A*, plus 1 ounce of *B*, and add 3 ounces of water.

This, like other pyro mixtures, tends to give a greenish or brownish gelatine stain.

Finally, a word as to the resulting prints. It will be readily understood that the times taken in printing these negatives vary somewhat. The ortol, No. 5, being slightly thin, was the quickest. Then Nos. 1 and 4 about the same time. No. 3 came next. Then No. 6, and, finally, No. 2 longest of all.

On the whole, they may be regarded as near enough to each other for the sake of comparison. Taking into consideration the gradation in the high lights (white lace) and detail in shadow (hair), with intermediate tones, their merits seem to be as follows: 1, Ortol; 2, metol-quinol-carbonate; 3, metol-quinol-caustic alkali and pyro soda equal; lastly, the other two about equal.

It must be remembered that these are not to be regarded as portrait studies, but that a head was used as a test object under very unfavorable conditions of lighting.

THE WASHING OF NEGATIVES.

By J. Gaedicke.

THE necessity of the complete removal of all light-sensitive silver residues, which do not form part of the picture, and the impossibility of following the process with the naked eye, causes a great deal of waste in time and water and great deterioration in the strength of pictures. It is therefore advisable to follow the process of washing by the aid of figures, under which the conditions may be governed. To determine the most favorable conditions for the washing, the diffusion rate of the hyposulphite of soda, which is to be removed from the gelatine, has to be considered. Experimenting on this line, a sheet of gelatine was applied to close a small hollow tube on one end, by melting the same on to the edges, so that a vessel with gelatine bottom was obtained. This tube was either filled with water and suspended in a solution of fixing soda so that the salt in a rising current would pass into the water, or the tube was filled with fixing soda solution and suspended in water, so that the salt in a falling current would reach the water. The first operation was to determine the influence of concentration of the salt solution upon the quantity of the fixing soda in the rising current, which passed through the gelatine membrane. The following was the result:

Concentration of the solution	2	3	10	20	per cent. fixing soda.
Quantity of the salt descended	2	4	7	8	milligram in 1 hour.

These figures show that the quantity of the salt descended is larger in proportion to the concentration of the solution, but that this quantity is not proportional to the concentration, but grows slowly. It follows, therefore, that the washing of the plates proceeds quickest in the beginning, and, later on, becomes slower. The quantity of fixing soda that descends at different times in the rising current was also ascertained to be as follows :

Time	30 min.	1 hour.	15 hours.	
Descended quantity.	1	2	6	milligrams fixing soda.

It follows, that the diffusion upwards, if left standing, will in course of time become considerably slower, so that in fifteen hours not 15 times as much, but only 3 times as much descends, as in one hour. The explanation for this is in the fact, that a heavier coating of salt solution will form over the gelatine, which prevents the water coming in contact with the membranes. If this heavier coating is removed, the diffusion will be accelerated, which is confirmed by the following experiment :

From a 20 per cent. fixing soda solution will descend in one hour :

If left standing undisturbed	8 milligrams of the salt.
If stirred repeatedly	10 " "

Diffusion is therefore accelerated by putting the water in motion ; this will take place much more rapidly by change of water, as the following determination shows : In half hour, descended from a 20 per cent. fixing soda solution in a rising current :

In one and the same water left undisturbed	1 milligram of the salt.
When the water was changed	3 milligrams "

The best washing method, therefore, will be the one with frequent changes of water and shaking of the tray. If one works with falling current, that is, if the fixing soda solution is put into the tube and is suspended in pure water, the fixing soda solution, which has penetrated will sink at once in the water to the bottom as heavy liquid and fresh water comes in contact with the membrane, to sink again to the bottom. The following confirmed the experiment. In an hour descends from a 20 per cent. fixing soda solution :

In rising current	8 milligrams,
In falling current	17 "

therefore more than twice as much in falling current as in the rising one. The falling current takes place, if the plates are placed film down suspended in water, or if standing vertically in the same. But even in the falling current the diffusion will slacken as from a 20 per cent. solution in

1 hour	17 milligrams,
14 hours	167 "

that is, per hour only 12 milligrams, descended. It is therefore not advantageous to leave the water standing too long on the plate, but the same should be renewed at short intervals.

The diffusion can be accelerated in the rising current, if a concentrated chloride of sodium solution is used as liquid, in which the lighter fixing soda solution rises, so that the gelatine comes in contact with fresh solution. With chloride of sodium solution, the reverse from water, more fixing soda will pass through the gelatine in the rising current than in the falling one. This proves, that salt water is an excellent material for washing the negatives, but the plate has to be rinsed well afterwards with fresh water.

After having determined in the foregoing the most favorable conditions for the washing to be frequent change of water and motion, the practical test was made as to how far the quantity of water and loss of time could be restricted, to be sure of a complete washing out and removal of the fixing soda. A freshly fixed dry plate 12 x 16 centimeters was well washed on both sides, placed into a tray, covered with about 100 cubic centimeters of water and well shaken for five minutes. The water was then poured off, and the quantity of fixing soda contained therein determined. The plate was at once covered again with 100 cubic centimeters of water, again shaken for five minutes, and this was continued until the water would not take up any more fixing soda. The quantities of the salt were as follows :

The first washing water contained............	0.165 gram fixing soda.
“ second “ “	0.025 “ “
“ third “ “	0.005 “ “
“ fourth “ “	0.001 “ “
“ fifth “ “	0.000 “ “
“ sixth “ “	0.000 “ “

The plate was therefore so completely washed out in twenty-five minutes with 500 cubic centimeters of water that it could be intensified with mercury. This shows what an enormous quantity of water and time is generally wasted.

The proportions change, of course, with very thickly coated plates. But the use of alum immediately after fixing, or the employment of a fixing bath containing alum, is most unfavorable for a quick washing. A negative, well washed after fixing, was put into an alum bath and then washed in the same manner as before described with the following result :

Number of Washing Water.	Time of Action.	Quantity of Fixing Soda in the Washing Water.
1........................	5 minutes.	0.018 gram.
2....................	5 “	0.006 “
3 and 4......	5 “ each.	0.003 “ each.
5 “ 6.................	5 “ “	0.002 “ “
7..................... ...	15 “	0.002 “
8 and 9..................	7½ “ each.	0.002 “ each.
10........................	60 “	0.001 “
11 to 18..................	5 “ each.	0.001 “ each.
19 to 23..................	5 “ “	0.0005 “ “
24........................	5 “	0.0000 “

This shows the great tenacity with which an alum-treated film will hold the fixing soda, as the water had to be changed twenty-four times in three and a quarter hours to wash out the small quantity of 0.0525 gram fixing soda. To avoid frilling, the plate should first be placed in a concentrated chloride of sodium solution, and afterwards treated with alum if it is the intention to finish washing in a short time.

Translated by
Henry Dietrich.

ACTION OF GALLIC ACID IN DEVELOPMENT.

By Dr. Lüppe-Cramer.

As is well known, an alkaline gallic acid solution has not the power to develop the latent picture. I have found, however, that by adding a proportionately small quantity of metol to a gallic acid solution with alkaline carbonate a developer may be produced, by which, in a normal time, a sufficiently strong negative can be obtained. With the small quantity of metol alone it could not be accomplished.

The following solutions were prepared:

A.—Cryst. sulphite of soda	20 grams.
Gallic acid	5 "
Water	100 cubic centimeters.

B.—Potassium carbonate solution, 1 : 10.

C.—Metol	1 gram.
Sulphite of soda	10 grams.
Water	100 cubic centimeters.

D.—Solution of sulphite of soda, 1 : 5.

To test the action of the gallic acid in the developer it is necessary to produce a comparison solution, which contains only metol, potassium carbonate, sulphite and water in the same proportions as the developer prepared with gallic acid. Apply

1.—Gallic acid solution,	*A*	50	cubic centimeters.
Potassium solution,	*B*	50	" "
Metol solution,	*C*	10	" "
2.—Sulphite solution,	*D*	50	" "
Potassium solution,	*B*	50	" "
Metol solution,	*C*	10	" "

If two plates are exposed now an equally long time and developed one with solution 1, the other with solution 2, the picture will appear very rapidly and with all its details with developer No. 2, while the picture developed with No. 1 comes slowly and is building up gradually. If the development of both plates is continued for six minutes, it will be found that in the weak metol developer only a thin negative without any strength has formed, while solution 1 gave a strong picture, differing only by its more brownish color from a picture made with a normal developer.

These tests led to the supposition that gallic acid might have an equal effect in combination with other developers.

I tried the following:

Pyrogallol.—When gallic acid is added to the pyro solution, the picture appears much slower than when developed with the weak pyro developer only, but shows in no way the properties observed in metol and gallic acid. The gallic acid acts the same as if bromide of potassium had been added to the developer, that is, retarding during the whole development.

Hydrochinon.—If gallic acid is added, hardly anything will appear, while without it the developed picture will appear with all its details.

Paramidophenol.—In connection with this substance the gallic acid acts as a retarder the same as with pyro. A slight action of the gallic acid can be observed by the brownish color of the negative, but an intensification is out of question.

Amidol.—If an equal quantity of potassium solution is taken, as when testing the other developers, the picture will appear so rapidly that the process can hardly be followed. Here the same action is observable, as when metol was added, but the difference in the strength of both pictures is not half as great as in the first test with metol.

Investigation was also made into the behavior of the developing process considered as normal for amidol, if no alkali is employed, and the following solutions were used for this purpose:

1.—Sulphite solution, 1 : 5	50	cubic	centimeters.
Gallic acid solution	50	"	"
Amidol	10	"	"
2.—Sulphite solution, 1 : 5	100	cubic	centimeters.
Amidol	10	"	"

The intensifying influence of the gallic acid is not observable here.

Even if a smaller quantity of alkali is taken, as in the following solutions:

1.—Gallic acid solution	80	cubic	centimeters.
Potassium solution	20	"	"
Amidol	10	"	"
2.—Sulphite solution, 1 : 5	80	cubic	centimeters.
Potassium solution	20	"	"
Amidol	10	"	"

No intensifying influence of the gallic acid will be observed.

These tests go to prove that the interesting process observed in the development with gallic acid and metol finds no general application, and the question arises: Is the intensification of the picture observed in the development with metol and gallic acid a real joint-development by the gallic acid, or is it to be considered as an intensification by the oxidation products of the alkaline gallic acid, which precipitates as a brownish black coloring-matter only at the exposed parts? To test this question, it seemed to me most simple to dissolve the silver from two comparison negatives. The plate developed without gallic acid can be reduced in a few minutes to glass clearness, while the plate, with gallic acid addition, continues to show, even after it has been in the reducer for fifteen hours, a light brown shade in the high lights and middle tones.

Still this remaining coloration does not seem so considerable as to cause the difference between the picture developed solely with metol and the one developed with metol and gallic acid. On the contrary, there seems to be an actual increase of the reduction power of the developer by the gallic acid hand in hand with the coloring-matter intensification, provided we do not assume that the reducing solution takes also a part in the coloring-matter picture.

Translated by
HENRY DIETRICH.

ABOUT STEREOSCOPIC VIEWS.

By Dr. Holm.

"STEREOSCOPIC views are a thing of the past," every photographer of the old school will tell you. True enough, at the time the old style *carte de visite* was flourishing and fashionable, stereoscopic views were much admired and adorned the center table in the parlor of almost every well-to-do family. But as new styles made their appearance, the stereo view was put on the retired list, and yet there is no picture with such a beautiful plastic effect as the stereo view—in it we see Nature as it actually is. It is, therefore, surprising that the younger generation of amateurs have given no more thought to reviving and awaking it from its slumbers. Even if its production is a little more troublesome and circumstantial, that should be no reason for neglect, and I hope that these lines may stimulate some of them into activity.

The stereoscopic camera is fitted with a pair of lenses of exactly equal foci. The distance between these two lenses (from axis to axis) is the same as that between the human eyes. That would be about 65 millimeters. Theoretically this is correct, but practically from 75 to 80 millimeters will usually give the best results. In the picture the objects represented are naturally much reduced in size, and the plastic effect is increased, if the distance between the objectives is increased. It is not advisable, however, to go beyond 80 millimeters, as the effect in the foreground will not be correct, and the eyes will be forced to an unnatural position in viewing the picture. While in ordinary views too rich a foreground might be disturbing, it will increase the plastic effect in the stereoscopic picture.

If now we look at a certain object, it will be seen by both eyes, but each eye does not see the same parts. The left eye sees more from the left; the right eye from the right side. The prolonged axis of both eyes meet, therefore, in a more or less sharp angle, according to the distance of the object. By this simultaneous vision from two sides we get the bodily impression, both pictures uniting in the brain, and conveying a plastic effect to the observer. The nearer the object, the wider will be the angle of the eyes' axis, and so much more will each eye see—of the side turned towards the objective. This proves that in the near objects, that is, the ones situated in the foreground of a stereoscopic picture, we observe the plastic effect much more distinctly than in those at a greater distance. The position of the lenses has, therefore, to be regulated accordingly.

To unite both pictures to one of plastic appearance, we have, therefore, to apply the stereoscope, an instrument whose lenses are so arranged that the axis of each inclines inward so that they actually include only one object, but from two different directions; that is, different with each lens. Both separate pictures will then unite into one body picture, in the same manner that our brain is accustomed to convey such impressions to our senses. It is also important and necessary that the position of both separate pictures to each other corresponds exactly with reality, so that the axis of each eye does not come

Photograph by DANA, New York and Brooklyn.

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into a forced or unnatural position. In other words, although both pictures differ, the same points must cover each other when looked at through the stereoscope, to form one plastic body picture. This would be an easy matter, if the pictures could be left as they appear on the plate. But here they are reversed, and, after the prints have been made, we have to mount them in reversed positions ; that is, the print from the right side of the negative to the left of the cardboard, and the left print to the right of the cardboard. If we compare the pictures we will find that they are not exactly alike on the edges, because each lens depicted the view from a different direction. Here is the difficulty in mounting, because, if improperly mounted, they will lose their stereoscopic or plastic effect. The eye is here the best judge, and it will tell us. The picture is supposed to have been taken in an exactly horizontal position. Now, when making a print, place the paper on the plate so that its lower edge will be in exact line with that of the plate. The horizon will then be also alike in both pictures, and we can cut off from the foreground afterwards as much as we please. The pictures are now divided in the central line. They are changed from right to left, and marked lightly with a pencil *L* and *R* to avoid mistakes. The *L* picture is then pasted on the cardboard to the left. We now put it into the stereoscope, lay the right (*R*) picture alongside and adjust, until the plastic effect is obtained. If the pictures should cover each other in the middle line, enough may be cut off, so that they join exactly. It is not necessary that a free space should be between the pictures.

By following these directions, the operator will always be successful, and may not justly ascribe his failures in obtaining plastic effects to defective apparatus, as is frequently the case among amateurs.

Translated by
HENRY DIETRICH.

GLEANINGS FROM GERMANY.

By HENRY DIETRICH.

HYDROCHINON Developer for Diapositives.—An excellent formula for all kinds of diapositive plates is composed as follows :

SOLUTION I.

Hydrochinon	11 grams.
Bromide of potassium	2 "
Sulphite of soda	57 "
Distilled water	600 cubic centimeters.

SOLUTION II.

Caustic soda	7 grams.
Distilled water	600 cubic centimeters.

For use mix

Solution I	1 part.
Solution II	1 "
Water	2 parts.

In hot weather, an alum bath is used after developing, as the film is apt to frill on the edges on account of the caustic soda.

Hydramin is the name for a new developer substance, which is obtained by letting hydrochinone and paraphenylendiamin act directly upon each other. The reaction product so obtained possesses in simple aqueous solution a certain developing power, but its energy cannot be increased by sulphite of soda, and even tri-basic phosphate of soda does not sufficiently affect it. With the addition of caustic lithia, however, a strong developer is obtained. The formula is as follows:

Sulphite of soda	16 grams.
Hydramin	5 "
Caustic lithia	3 "
Water	1 liter.

Small quantities of bromide of potassium solution have a strong action.

First Preparation for Coloring Bromide of Silver Pictures.—This preparation differs for use with oil, pastel or water-color work. For oil colors, a supporting preparation of gelatine solution is applied by floating the well-tanned and still-moist bromide of silver picture upon a pretty cool solution of 30 grams of white gelatine in 1,000 cubic centimeters of water and then drying it. The picture, when dry, is mounted with a strong shellac solution. For water-colors, the picture is prepared in the following way: After mounting blow with an atomizer a weak shellac solution on the surface until the picture acquires a faint gloss. The shellac solution is produced by pouring 240 grams absolute alcohol on 120 grams shellac, letting it stand for twenty-four hours, after which it is diluted with ¼ liter of alcohol and filtered after thorough settling. For pastel colors, the following process is applied: Blow the shellac solution as described before upon the picture, and before it becomes thoroughly dry work the surface with finely powdered pumice stone by means of a cotton tuft. This will produce the required grain.

The astronomical chart, to be made exclusively by photography, as proposed and adopted by the International Scientific Congress in Paris ten years ago, is satisfactorily progressing in Paris and Potsdam. When finished the chart will contain about thirty millions of stars from the 1st to the 14th class. Paris has already finished and published fourteen tables. Some of the views are very difficult to take. Stars of the 14th class will give only a comparatively faint picture after an hour's exposure, and they seem to disappear on the paper while under the negative. To avoid this, three exposures of thirty minutes' duration are made in succession upon each plate, but after each exposure the plate is moved a little in the holder so that the stars will not appear on the picture as dots, but more in the shape of triangular spots, whose disposition excludes every mistake. Owing to the method recommended by the Congress in 1896, we are now enabled to procure such complete results that on a negative of 16-centimeter width several thousand stars can be discerned. Every one of the charts published by the Paris Observatory comprises about six thousand stars, whose positions can be determined exactly.

THE COMING SOLAR ECLIPSE.

IN view of the great interest centering in the coming total eclipse of the sun, and of the scientific value to be derived from successful photographs of its various phases, many of which are possible without the use of special astronomical apparatus, we are glad to reprint the following extracts from a paper by Professor George E. Hale, of Yerkes Observatory, Williams Bay, Wis., presented by him to the Astronomical and Astrophysical Society of America, and a circular issued by the Eclipse Committee of the Society itself, in the hope that it may stimulate some readers of the BULLETIN to successful effort along the lines suggested.—[EDITORS.]

SOLAR ECLIPSE PROBLEMS.

By GEORGE E. HALE.

The writer, as Secretary of the Eclipse Committee of the Astronomical and Astrophysical Society of America, has received so many requests for suggestions from intending observers of the coming total eclipse that it has seemed advisable to bring together, for the convenience of those who may not have ready access to astrophysical literature, various data bearing upon some of the more important problems which this eclipse may help to solve. As no total eclipse of the sun has been visible in the United States since 1889, it may be expected that many individuals and institutions will be anxious to take advantage of the present opportunity. Considered merely as a spectacle, the eclipse will amply repay those who may journey far to see it. But if the maximum scientific return is to be derived from this rare phenomenon, every intending observer must familiarize himself with the results obtained at previous eclipses, devote much time to the consideration of the questions still demanding solution, and give particular attention to the design of the apparatus required for the work selected. It fortunately happens that valuable scientific results can be obtained with simple and inexpensive instruments. The unsolved problems, too, are numerous and varied, offering a wide field for choice, and appealing to the individual tastes of many observers. It is only necessary to choose intelligently, basing the decision upon one's previous experience in observational work and a consideration of available instruments. If possible, there should also be some measure of co-operation between different parties, and here the Eclipse Committee stands ready to lend its aid.

The eclipse will occur on May 28, 1900, between 8 A. M. and 9 A. M. The central line of the shadow will cross the States of Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi and Louisiana, the duration of totality decreasing from 1 minute 46 seconds on the Atlantic seaboard to 1 minute 18 seconds near New Orleans. The advantage due to a longer duration of the total phase is more than offset, however, by the much greater probability of cloudiness at points near the ocean, as shown by the survey of cloud conditions recently made under the supervision of the United States Weather Bureau. From these observations it appears that the chances of fair weather are best on the highland of the southern portions of the Appalachian Mountains.* It is to be hoped, however, that all of the stations will not be confined to this region, as there are many reasons why they should be distributed all along the line of totality.

In preparing a plan of operations it is first necessary to remember that the eclipse will be a short one, even for those who may view it from the Atlantic Coast. Other things being equal, it therefore will not be desirable to undertake observations which cannot be successfully completed within a space of little more than a minute. Thus it would hardly be advisable to attempt to photograph the fainter portions of

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*See *Weather Bureau Bulletin*, No. 27. In addition to statistics of cloudiness, this bulletin contains much valuable information regarding suitable sites for stations, hotel accommodations, etc.

the spectrum of the corona on this occasion, and it is exceedingly doubtful whether it would be worth while to repeat the hitherto unsuccessful attempts to measure spectroscopically the period of rotation of the corona.

The suggestions offered in the following paragraphs make no pretensions to fullness of scope or adequacy of treatment. They are in no sense intended to take the place of "Instructions" to eclipse observers, and it is not supposed that they will be of service to experienced astrophysicists, except possibly in recalling certain matters which are sometimes overlooked. To amateurs possessing small instruments, and to others who have had little practical experience in solar work, it is hoped that they may be of some value.

4. Small Scale Photographs of the Corona.

Every possessor of a suitable camera is equipped with apparatus sufficient to give valuable results in photographing the corona. As Mr. Maunder has pointed out in his interesting discussion of the results obtained at the recent Indian eclipse, with lenses of focal length not greater than 5 feet and ratio of aperture to focal length not greater than $\frac{1}{15}$, it is not necessary to have an equatorial mounting for the camera when the exposure does not exceed one-half second. It must not be supposed, however, that it is only necessary to point any camera at the sun and make a snap exposure. Such a procedure might possibly produce a good picture of the corona, but the most valuable results will be obtained by those who observe a few simple precautions:

a. It is advantageous to use lenses of considerable focal length (from 30 to 60 inches), provided the angular aperture is not too small. Such lenses should show the corona on a scale large enough to bring out many important details. Very short focus lenses will be useful for long-exposure photographs of the coronal streamers, if mounted equatorially, and moved by clockwork.

b. Light and unsteady camera boxes should not be employed. A strong wooden box of the proper length is much more suitable than a camera having leather bellows.

c. It is of great importance that the camera box should be very solidly mounted, so that it will not be affected by the wind, and not easily set into vibration by any cause. Unless an equatorial mounting is to be used, it will be advantageous to screw the wooden camera box to the top of a post firmly planted in the ground. The optical axis of the lens should point toward the sun at the middle of totality. Unless the focal length of the lens exceeds 5 feet, or the diameter of the field is very small, it will be unnecessary to change the position of the camera during totality.

d. The lens can be most accurately focused by photographing star trails, a series of exposures being made for different positions of the lens. After the best focus has been ascertained the lens should be firmly clamped in place.

e. The results obtained at the Indian eclipse demonstrate the great advantage of using multiple-coated plates. It will be best to employ triple or quadruple coated plates, and as a further safeguard the plates may also be given a suitable backing in order to still further reduce the danger of solarization. With such plates it is possible with an equatorially mounted camera to obtain the faint outer extensions of the corona without serious interference from the bright inner corona. However, too much should not be left to the plates, for the care exercised in development is of the greatest importance.

f. With the most rapid plates it would appear from the results discussed by Mr. Maunder that an aperture of $\frac{f}{15}$,* exposures of from $\frac{1}{60}$ second to $\frac{1}{15}$ second will suffice for the prominences and $\frac{1}{10}$ second to $\frac{1}{5}$ second for the inner corona. Such short exposures can, of course, be given only with the aid of a suitable shutter. A greater extent of the corona may be obtained with exposures from $\frac{1}{2}$ to $\frac{3}{4}$ second. Mr. Maunder believes that, in order to obtain a photograph of the corona as a whole, the exposures should not exceed one second. It is evident that most of the exposures so far referred to are easily within the reach of those who employ fixed cameras. If it is desired to secure the great extensions of the corona, which at the Indian eclipse were traced to a distance of nearly fourteen lunar radii from the sun, the camera must be mounted on an equatorial telescope provided with a driving-clock. In this case the exposure might well continue throughout the entire time of totality, but great care should be taken to cap the lens several seconds before the expected reappearance of sunlight. It is desirable to have several lenses of different focal lengths carried by the same equatorial mounting. The long focus lenses, giving large solar images, should be used in photographing the prominences and the structure of the inner corona, while the short focus lenses may be employed to record the long streamers.

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* For other angular apertures the exposure may be considered to vary inversely as $\left(\frac{f}{a}\right)^2$.

g. Care must be taken to provide for the accurate orientation of all photographs, as it is highly important that the north and south points of the image shall be known. If the plate stands in a vertical position, as it may when a heliostat is used, a fine plumb line hanging immediately in front of it will give satisfactory results. In the more common case, where a camera pointing at the sun is employed, a series of rapid exposures made with reduced aperture during the partial phase, while the sun moves across the stationary plate, will serve the purpose.

It is to be hoped that during the coming eclipse cameras in the hands of amateur observers will be distributed all along the line of totality in the United States, in Spain, and in Algeria. A comparison of such a series of photographs might lead to very valuable results.*

5. Photographs of the Corona During the Partial Phase.

During the recent Indian eclipse Mrs. Walter Maunder, using a triple-coated plate and a Dallmeyer stigmatic lens of 1½ inches aperture and 9 inches focal length, succeeded in securing a photograph of the inner corona 39 seconds after the end of totality. As Mr. and Mrs. Maunder point out in the report to which such frequent reference has been made, it will be advisable to repeat and extend these experiments at the coming eclipse. The problem of photographing the corona in full sunlight is one which has recived a great deal of attention, but hitherto without tangible result. It may be doubted whether the use of multiple-coated plates will be sufficient of itself to overcome the great obstacle of atmospheric glare, but it is not impossible that the corona can be photographed in this way during partial eclipses. A series of exposures made before and after totality on multiple-coated and heavily backed plates should be of value, especially if the image of the photosphere is prevented from falling on the sensitive film. An occulting disk before the plate should, therefore, be employed if possible. Mr. Maunder believes that with an aperture of $\frac{f}{15}$ the exposures out of totality should range from $\frac{1}{5}$ second down to $\frac{1}{50}$ second.

6. Photographic Search for Possible Intra-Mercurial Planets.

The possibility that planets may exist within the orbit of mercury has led to many attempts to detect such objects under the favorable conditions presented by a total solar eclipse. As the unsuccessful visual observations made at previous eclipses tend to indicate that no very bright planet is likely to be found, preparations should be made to record all objects, down to the lowest attainable magnitude, in the region about the sun. Except by a most fortunate chance, nothing can be expected to result from visual observations. Even if the region were divided among a great number of observers, little could be done in the brief space of totality, and disputes would be likely to arise on account of the uncertainties inseparable from hurried work. It would, therefore, seem inadvisable to waste effort on visual observations, but a thorough photographic search should undoubtedly be made. In undertaking such a search, the following considerations are among those which should be borne in mind :

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* In this connection one cannot do better than consult the *Report on the Indian Eclipse of 1898*, recently issued by the British Astronomical Association. Many of the above suggestions are derived from this source.

a. The lens should combine the greatest possible rapidity of action with the largest possible field. Good portrait lenses having an aperture of about $\frac{f}{5}$ should give well-defined star images over a field about nine degrees in diameter on a flat plate. Experiments recently made by Professor Wadsworth and Mr. Brashear show that the diameter of the field can be greatly increased by the use of concave plates of suitable curvature. It is advisable to employ lenses in pairs, in order that suspected images may be verified on an exactly similar plate made with another lens. In addition to portrait lenses it will probably be advantageous to use rapid rectilinear lenses giving very large fields.

b. The suitability of a lens, the best exposure time, and the proper development can all be ascertained by photographing stars under conditions as nearly as possible like those prevailing during totality, when the general illumination will probably be not very different from that of a clear sky half an hour after sunset. The maximum exposure given should be a few seconds less than the computed duration of totality, for in order to avoid the possibility of complete loss it will be advisable at the eclipse to cap the lens an appreciable time before the sun is expected to reappear. Such experiments will enable one to select the lens best adapted for the purpose, to determine approximately the exposure time giving the greatest number of stars, and to form an idea of the number of stars likely to be recorded during the eclipse. Professor W. H. Pickering, who has great confidence in the photographic method, finds from experiment that it should be possible, under eclipse conditions, to photograph stars as faint as the sixth magnitude.

c. The camera should be carried by a good equatorial mounting, provided with driving-clock. Care should be taken in adjusting the instrument, for without perfect following the maximum photographic effect of course cannot be obtained.

d. Those who possess large portrait lenses of great angular aperture, but lack a suitable mounting, will do well to try photographing star trails under the conditions named above. It is probable that even with a fixed camera the chances of success would be decidedly greater than in the case of visual observations.

e. It goes without saying that the most rapid plates obtainable should be used. How far it will be safe to push the development can be roughly determined from the preliminary experiments.

f. In order to cover the largest possible area of sky it is very desirable that parties planning to undertake this work should coöperate, each devoting its attention to a particular region. All persons provided with suitable instruments, who are willing to participate in a general plan of operations, are invited to address the Eclipse Committee.

It may be added that Professor Newcomb, whose suggestions are embodied in the above paragraphs, considers a photographic search for possible intra-Mercurial planets as one of the most important pieces of work that can now be attempted during total eclipses of the sun.

The following additional suggestions and summarizations are reprinted from a circular letter issued by the Eclipse Committee of the Astronomical and Astrophysical Society of America, of which Prof. Hale is Secretary :

Relative Position of the Sun and Moon.—(This will require the observer's position and the time to be known.) (*a*) From visual observations of contacts, especially contacts II and III, made at stations near the central line, and at stations near the boundaries of the shadow path. (*b*) From photographs of the solar crescent obtained with long focus instruments at stations on the central line, within one minute of the contacts, the exact moments of exposure being noted. The programme of exposures should be symmetrical with reference to the middle of the eclipse. Snap shots of the solar crescent taken a moment before the sun is entirely covered, and the moment after it reappears, with a large camera, may also be useful if the photographer can give the moments to the nearest second of standard time. The slowest plates should be used, and the exposures given by automatic shutters. With a camera ratio of $\frac{a}{f} = \frac{3}{480}$, an exposure of 0.001 second is abundant. Excessive exposures cannot be expected to yield results comparable to visual observations of the contacts.

Photographs of the Corona.—Attention may be called to three classes of camera lenses used for recording the corona. (*a*) Lenses for which $\frac{a}{f}$ is $>$ or $= \frac{1}{6}$, especially adapted to recording the details of the outer corona and the extensions. A wide range of exposures, from $\frac{1}{100}$ second up, should prove useful. The greatest extent of corona hitherto recorded was on triple-coated plates, exposure 20 seconds. Some observers consider that long exposures on very slow plates, fully developed, should be effective in distinguishing the long streamers on the bright-sky background. Some also believe that the faint extensions will be best photographed with lenses for which $\frac{a}{f}$ is considerably less than $\frac{1}{6}$. (*b*) Lenses in which $\frac{a}{f}$ is about $\frac{1}{15}$, especially adapted to recording the details of the mid-corona. The rear lens of a photographic doublet may be used alone to give a long focus. With rapid plates, exposures of $\frac{1}{60}$ second should easily record the prominences, $\frac{1}{10}$ to $\frac{1}{5}$ second the inner corona, and a range of longer exposures the mid-corona. (If equatorial mounting and clockwork are wanting, exposures should not exceed one or two seconds for $f = 60$ inches, and similarly in other cases. (*c*) Objectives of relatively great focal length, giving details of structure in the inner corona. The objective may be pointed directly at the sun and used with a moving photographic plate; or it may receive light from a suitable heliostat. With $\frac{a}{f} = \frac{1}{96}$, an exposure of $\frac{1}{4}$ second, on slow plates, has recorded the prominences. Revolving diaphragms immediately in front of the photographic plate and concentric with the moon's image, may be used to reduce the equivalent exposure time of the inner corona.

Before and after the total phase it will be interesting to repeat, and extend as far as possible, the successful experiments made at the Chile and Indian eclipses, of photographing the corona many seconds before and after totality.

In all photographic work care must be taken to provide for the accurate orientation of the coronal image. A satisfactory method consists in exposing a plate to the sky on a dark night, allowing the stars to trail across the plate. For cameras in which $\frac{a}{f}$ is large, β *Herculis* will give a suitable trail. *Mercury* and ε *Tauri* will appear on most photographs of the corona, and will also serve as an excellent means of orientation.

Eclipse photographers cannot be too strongly cautioned against a dense development of the plate. This has been the great fault with most of the negatives at previous eclipses. The image should be slowly developed and kept as thin and transparent as possible.

All photographic plates used in the eclipse problems should be "backed" to prevent halation. Water-color lampblack, reduced to the consistency of paste and applied to the back of the plate, will answer well for this purpose. Or the back of the plate may be flowed with a mixture of normal collodion 100 parts, chrysoidine 3 parts.

For valuable information regarding probable weather conditions, local time and duration of totality, etc., reference is made to *Weather Bureau Bulletin*, No. 209 and the supplement to the *American Ephemeris* for 1900.

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THE USE OF MIRRORS IN PHOTOGRAPHY.*

IN many instances in photography, owing to the peculiar nature of the subject, much may be done with the aid of mirrors to produce satisfactory results that otherwise would be almost impossible of accomplishment. A very general belief exists that mirrors are only of use in instances where a certain class of negatives is required for one or other of our photo-mechanical processes. No doubt they are of great assistance to the process worker, and any one desirous of making direct reversed negatives for single transfer carbon work, but they cover a much wider field in the hands of an all-round photographer.

It is well known that exception has been taken to the use of any ordinary mirrors in photography, simply by reason of the fact that a mirror silvered at the back like we find all ordinary glass mirrors to be in common households, is certain to yield double images, one of these images being yielded by the silver surface of the back, and the other from the plain surface of the glass; hence, for the purposes of photography, specially constructed mirrors are employed. These may be of what is termed a double-surface form; that is, both the back and the front of the glass are silvered, though why such an expedient as silvering both surfaces should be resorted to it is difficult to see, for in reality only one surface is actually required. All surface-silvered mirrors are delicate tools to handle and work with, and when they get out of order they are liable to give trouble when used for photography.

Although it is quite true that an ordinary household mirror, which is merely silvered at the back, is liable to yield double images, these old-fashioned forms of mirrors were employed with much success many years ago; in fact, long before the advent of gratings in process negative-making, and it may surprise some of our modern workers to be told that no less an authority than the late J. Traill Taylor specially advocated their employment in portraiture, pointing out that, in many instances where this class of photography was being conducted in such situations as private rooms and the like, the system of working by reflection was greatly superior to a direct method of lighting. When using a mirror for this kind of work, it is pointed out that the double image of a person in front of a mirror is only visible when the angle composed of the incident and reflected ray is obtuse, and that such a condition need not be in force when using a mirror for taking a portrait in an ordinary sitting-room.

We believe it was the late Mr. J. Traill Taylor who first drew attention to the means whereby an ordinary mirror could be employed for portraiture without yielding any double image, and, if we mistake not, his method of using a common mirror was very simple, and consisted in placing it upon a table close to any ordinary window, and then arranging the sitter about a yard from it, and so seated as to present to the observer's eye a perfect profile. If such an image is very carefully inspected, the observer keeping so near the sitter as just affords an uninterrupted view of the mirror, a solid image without any appearance of doubling will be apparent, and, when a camera is brought upon the scene, and a plate exposed in the ordinary way, the negative of the reflected figure, even when examined by a magnifying glass, will show nothing wrong. Of course, negatives produced in this manner are reversed, but in many instances this is desirable, especially, as pointed out, for carbon printing.

There are certainly numerous instances where an ordinary household mirror would not by any means be the most useful to employ by reason of having to so pose the article as to show particular portions or points of the object. Large mirrors, specially prepared for photographic purposes, then become very expensive tools to acquire, and, no doubt, but few of the ordinary run of amateurs would be found willing to incur the cost of same. There is, however, another expedient, viz., the employment of black mirrors, and these any one can, with a little trouble, so rig up himself as to enable a very large field of operations being conducted. In floral photography, for instance, they are invaluable, and it is, perhaps, letting the cat out of the bag to make public their use in this particular class of photography, for it is just one of the good things that some of the old practical workers have managed to keep up their sleeves. Then again, in cloud photography, the employment of a black mirror for this purpose will come as a revelation to those who have never seen the beautiful effects of the sky as reflected from the surface of a black mirror, and the ease with which splendid negatives are obtained of them. Of the innumerable classes of articles which are specially amenable to treatment by means of a mirror there is no need to speak particularly; suffice it to say that such articles as caskets, vases and inlaid work of every description are at times only possible of being photographed by the aid of a mirror, and instances will be met with, such as where an open book has to be photographed lying flat, or nearly so, and in which all the printed matter has to be reproduced so as to be easily readable, in which, were it not for employing a mirror, it would be almost impossible.

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* *The British Journal of Photography*, March 23, 1900.

Process workers know the immense advantages conferred by a good mirror, and, probably owing to such working, so that a wider angle can be transmitted therewith than is possible with prisms, generally prefer them on that account.

To the great body of amateur workers, however, the use of mirrors in photography may be said to be unknown, and, doubtless, the cost of a really perfect mirror, as supplied for high-class process work, would deter many from adopting them in their work. This latter objection, however, need not prevent any enthusiast from undertaking much interesting work, even among the class of subjects, such as clouds and floral photography, previously referred to, for a serviceable mirror, may be made by any one without incurring much expense, after the following plan:

In providing a mirror, it stands to reason the surface of the glass employed must not only be free from flaws, but likewise, if perfect definition is to be acquired in photographing by its means, its surface must be absolutely flat. To obtain this, there is no necessity for any one who merely intends experimenting in such as cloud photography, and on other subjects where extreme fineness of definition is not required, going to the expense of having a large sheet of glass specially ground and polished, for in most households or second-hand furniture shops an old mirror can generally be found, the surface of which is quite true enough and free from flaws, which, on removing the silver compound from the back, by means of dilute nitric acid and a coarse or woolen cloth, will permit of its being converted into a very serviceable black mirror. To do which, on the back surface being rendered free from any silver deposit, let it be carefully coated with Bate's black varnish or a good sample of Brunswick black, which will produce a very serviceable article.

In using mirrors of this description, unlike those in which the back is coated with silver, the active reflection would appear to be from the front surface of the glass only, the light on passing through to the back becoming absorbed by the dark pigment, so that there is no trouble as a rule from double images when such mirrors are employed. The exposure to a sensitive plate, when some subjects of a non-actinic color are being photographed, may require to be considerably longer with a black mirror than would be the case with an ordinary silver mirror, but the most perfect definition is capable of attainment. When dealing, however, with light objects, such as clouds, etc., the exposure, even with the black mirror, becomes very rapid.

Flower studies in every variety of color are most beautifully rendered, and to those who have never experimented in this special branch of photography there lies a wide field for delightful occupation and study.

In using a mirror of any description, of course, the resulting negatives are reversed. Professionals, of course, easily overcome this difficulty, but to the general run of amateurs the printing of such negatives by means of carbon is, in point of fact, most desirable, and, should any one unacquainted with this delightful process of printing take to it, he will never regret doing so, for it is certainly one of the most beautiful and permanent processes we possess.

THE RAPID DRYING OF NEGATIVES.[*]

IT is a matter of common knowledge that when negatives have to be dried quickly in order to obtain prints from them in a hurry, the end may be attained by bathing the plate either in spirits of wine or in formalin, after which heat may be applied to the negative without fear of melting the gelatine. Simple as the matter seems to be, queries are constantly being put as to the strength of the solutions and the general method of procedure.

When methylated alcohol free from mineral oil could still be obtained without difficulty, it was at once a cheap and reliable agent, all that was necessary being to flood the plate repeatedly with small quantities, or to immerse the plate in a dish of it for ten minutes or so, after which the negative, if placed in a current of air, would dry in a quarter of an hour.

If modern methylated alcohol be used in this way there is a strong probability that on the application of heat, and sometimes without it, an opalescent deposit will be found in the body of the gelatine, difficult, if not impossible, to remove, and ruining the negative by its presence.

As the regulations governing the sale of the unadulterated methylated alcohol preclude its use by most workers, and as pure spirit of wine is too costly for the purpose, it is desirable to know something of the conditions under which the alternative agent may be employed. It is generally recommended that when the negative has been fixed and washed it should be bathed for some minutes in a 10 per cent. solution of formalin of the strength commercially supplied, washed in hot water, and dried by heat.

Even a 10 per cent. solution, however, gives off a pungent vapor, which, if accidentally inhaled, produces an irritating cough, and some who have used it find that the liquid has an injurious effect upon the skin. A few experiments were, therefore, carried out with a view to determine how far the strength of the solution might be reduced without impairing its efficiency, and, secondly, to discover how negatives so treated would compare with others finished in a more leisurely manner.

To insure that the conditions should be identical with those which would occur in ordinary practice, the plates were exposed, developed, and fixed in the usual way. One plate, after being removed from the hypo bath, was slightly rinsed in cold water and immersed in a 10 per cent. solution of formalin for five minutes, after which it was treated with six applications of boiling water in rapid succession poured upon it direct from the kettle. No frilling took place, nor did the gelatine appear to be dissolved by the boiling water. The surface of the negative, however, became granular in appearance; it was mopped with a tuft of moist cotton-wool to remove any grit or dirt which might have become attached to it, and was then dried by heat in ten minutes, the total time occupied after its removal from the fixing bath being under a quarter of an hour. The granularity was now strongly marked, and when examined under a strong glass was found to vary with the strength of the lights and shades. However useful this granularity might prove to be in a swelled gelatine process, it was quite out of place in a negative to be used for ordinary printing processes, and was quickly removed by rubbing with a piece of wash leather moistened with alcohol. To test the effect of the formalin the film was stripped from the glass, placed in a test tube with a little water and boiled for several minutes. As the water remained perfectly clear and free from froth, it may be assumed that the gelatine had been rendered practically insoluble.

A number of plates were then treated with formalin solutions of various strengths, and it was found, as was expected, that practically similar results were obtained by prolonging the immersion as the solution was made weaker.

As complete insolubility of the gelatine is unnecessary so far as rapid drying is concerned, and might prove objectionable if intensification has afterwards to be resorted to, it was thought desirable to treat a negative with a very weak (2 per cent.) solution for a brief period, and note the results. The negative was merely rinsed in cold water to remove the surface hypo, placed in a 2 per cent. solution of formalin for ten minutes, and treated with the boiling water and dried by heat, as in the instance detailed above. Neither the boiling water nor the dry heat had any injurious effect upon the gelatine, but the surface exhibited the same granularity as in the first negative.

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[*] By J. McIntosh, in *Photography*, March 15, 1900.

As the operations occupied less than five and twenty minutes from the time the plate was removed from the fixing bath, and as the breath could be inhaled directly over and close to the formalin solution without discomfort it may be considered that the weak solution is equally as efficient for practical purposes as the 10 per cent. solution, and much more convenient to use.

It remained to be seen if the hypo was as effectually removed from the negative by the rapid washing with hot water as by a more prolonged washing in cold water. A third negative was made and washed in running water for one hour, a period insufficient for the total removal of the hypo but probably in excess of that which the average negative receives.

The three negatives specially referred to had the films stripped and placed in test tubes, each with an ounce and a half of water, and were boiled for several minutes. As already stated, the film treated with the 10 per cent. solution of formalin proved insoluble; that treated with the 2 per cent. solution had not been completely hardened, as the water frothed, and, although the film remained intact, sufficient of the gelatine was dissolved to form a weak jelly when the water was cooled. The film which had not been treated with formalin speedily dissolved, with the exception of some threads of the denser parts of the image where the gelatine had been tanned by the action of the developer. As a test for the presence of hypo the following solution was used:

Potassium permanganate	2 grains.
Potassium carbonate	20 "
Water	40 ounces.

A drop or two of this crimson liquid was added to each of the tubes; as it mingled with the water in which the films had been boiled, the pink color slowly faded out, and gave place to a dirty yellow, showing that though the quantity of hypo present was probably small it had not been entirely eliminated. As a comparative test a minute crystal of hypo was dissolved in 2 ounces of water, and on adding the permanganate solution the pink color was immediately discharged. Little difference could be detected in the action of the three waters upon the permanganate solution; if there was any difference the films washed with hot water after the formalin treatment appeared to have least hypo in them.

It would appear from these results that negatives hurriedly washed and dried as above are, with the exception of the surface granularity mentioned, likely to be as free from objectionable qualities as those treated in the ordinary manner.

One word of caution may, however, be given. The writer has found that the gelatine in various makes of plates varies in solubility to an enormous extent. In some instances when boiling water was poured upon the newly fixed and washed plate the solution of the gelatine could scarcely be observed, although frilling at once set in. In other instances the gelatine dissolved at summer heat (70 degrees or 75 degrees), when an energetic developer was being used. In dealing, therefore, with an unknown plate, it would be wise to use the formalin of a strength of 3½ or 4 per cent.—say 1 in 30—to allow the action to continue for a quarter of an hour, and to use the hot water a little under the boiling point.

All copy for June issue must be in our hands by May 15th at latest.

THE KROMSKOP.

WHILE the pursuit of direct color photography has thus far proved illusive, and in the opinion of some pretty high authorities must always be so, the indirect methods are steadily developing and growing in practical importance. The "Kromskop" system of Mr. Frederic Ives, in particular, is now coming to the front, and enjoys the distinction of being the first method by which photographic color reproductions have been obtained which are so perfect as to deceive the eye of the uninitiated, many of whom have suspected a trick when shown the reproduction of objects in the stereoscopic Kromskop.

Originally, this method, even after it had attained to perfect results, was handicapped in its appeal to public favor by the multiplicity of operations involved, which were calculated to discourage a practical interest in it. After many years, and the issue of a large number of patents, Mr. Ives has reduced the practice of Kromskop color photography to the simplicity of ordinary stereoscopic photography, and it is claimed that even amateurs can now, with very little trouble, reproduce to the eye every visible quality of the objects photographed—"color, texture, sheen, translucency, atmosphere, solidity."

In comparison with the original complicated devices with which this result was obtained, the simplicity of the perfected camera and viewing device seems really marvelous.

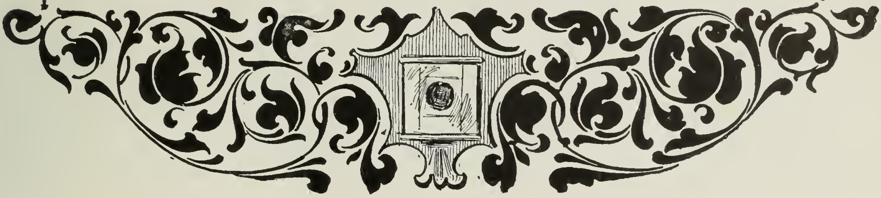
The principles of the system are now pretty generally known. A color record is first made, which consists of three photographic images which have been made through three selective color screens, according to a principle which was patented by Mr. Ives. This color record is then viewed in the Kromskop; in which each element of the record is seen through its appropriate colored glass, and all are optically blended so as to present to the eye a single image in the natural colors.

The perfected Kromskop camera contains, in addition to the parts of any simple one-plate camera, nothing more than two prisms and three-color screens, and the Kromskop itself consists essentially of nothing more than a case and four pieces of colored glass. The successful reproduction of the colors of Nature by such simple means deserves the appreciation which it will no doubt receive. As an achievement in applied science it has already been recognized by the award to the inventor of the medals of several scientific societies at home and abroad.

INFLUENCE OF LIGHT UPON THE COLOR OF DIAPOSITIVES.

DR. J. M. EDER has found that diapositives upon chloro bromide of silver plates assume a black color if made by kerosene or gas-light, but the color becomes brown if exposed to a stronger light. Dr. Eder is of the opinion that the stronger light, which is richer in violet rays, has more effect on the chloride of silver, while the yellow kerosene light is of relatively less action upon chloride of silver than upon bromide of silver. The maximum of sensitiveness of chloride of silver is more towards the outer violet than the maximum for bromide of silver.

SOCIETIES



THE annual meeting of the California Camera Club was held in San Francisco on April 3d. President J. W. Erwin was re-elected for the third consecutive year by a large majority, and other officers were chosen as follows: W. B. Webster, First Vice-President; A. L. Coombs, Second Vice-President; W. E. Palmer, Secretary; E. G. Elsen, Treasurer; W. A. Scott, Librarian. The Club was shown to be in a flourishing condition, having a substantial balance to its credit and a membership of three hundred and eighty-four.

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THE Harvard Camera Club, at a meeting held in March, elected the following officers for the ensuing year: W. B. Swift, President; W. P. Cohoe, Vice-President; J. H. White, Secretary and Treasurer; H. W. Elliot, Corresponding Secretary.

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AT a meeting held on April 10th, the Lawrence (Mass.) Camera Club elected the following officers: Mr. Stevens, President; Mr. Wainwright, Vice-President; Mr. Greer, Treasurer; Mr. Prince, Secretary.

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THE annual meeting of the St. Paul (Minn.) Camera Club was held on April 10th, and resulted in the election of the following officers: W. E. Johnson, President; W. J. Sonnen, Vice-President; H. A. Clifford, Secretary; F. H. Lloyd, Treasurer. The Club has met with marked success during the first year of its existence. It was started only a year ago with a very small membership, which has increased in a gratifying manner, numbering at present over one hundred.

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THE Orange (N. J.) Camera Club has elected the following officers: D. S. Plumb, President; H. R. Terhune, Vice-President; A. C. Van Ness, Secretary; E. S. Butterfield, Treasurer.

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THE Albany (N. Y.) Camera Club held its annual election of officers on April 6th, with the following result: R. S. Oliver, President; C. W. Reynolds, Vice-President; C. L. Palmer, Secretary; T. L. Carroll, Treasurer; M. R. Rochester, Librarian. An instructive lecture was given by Professor E. W. Wetmore, of the State Normal College.

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THE annual meeting of the Y. M. C. A. Camera Club, of Binghamton, N. Y., was held on March 16th, and resulted in the election o the following officers: A. B. Brown, President, re-elected; L. E. Hooker, Vice-President; F. L. Lee, Secretary; E. A. Robinson, Corresponding Secretary; G. G. Hand, Treasurer.

Our Reviewer.
School of Practical Process Engraving

THE opening of the season brings from the manufacturers its annual installment of catalogues, which, however, have never been more attractive than they are this year. "The Witchery of Kodakery," as its name implies, describes the advantages of the many styles of Kodaks manufactured by the Eastman Kodak Company, and is beautifully gotten up with embossed and colored cover, and contains 64 pages of descriptive matter and prices, with halftone illustrations of a very high quality.

The catalogue of Poco cameras, manufactured by the Rochester Camera and Supply Company, and that of the Ray cameras, from the Ray Camera Company, are also marked improvements on the issues for 1899, which were themselves excellent examples of good taste in printing and binding. Either of these catalogues may be had, on request, of our publishers.

THE 1899-1900 catalogue of Syracuse University, just received, shows an astonishing development of the University in the past year, both in increase of membership and extension of college buildings. The catalogue is made up of over 250 pages of matter pertaining to the University courses, and will be of interest to those who contemplate entering collegiate life.

OLIVER TWIST and the American public are much alike in their appreciation of a good thing, and, when they find it, want "more." That the photo-miniature is a good thing is evidenced by the fact that the demand for No. 3, dealing with HAND CAMERA WORK, and No. 4, dealing with PHOTOGRAPHY OUTDOORS, has been so great as to have used up the entire first editions, and to have necessitated a reprint of each which brings the first named book into its sixth and the second into its seventh thousand, respectively. The publishers, Messrs. Tennant & Ward, are to be congratulated on having so closely foreseen the popularity of their books.

WE have received "Die Photographie im Hochgebirg" (Photography in the Highlands), by Emil Tershak, and published by Gustav Schmidt in Berlin. It is a very useful and interesting book with illustrations, intended principally to give practical advice to amateurs and tourists, plying the camera through Highland districts. The experience which Mr. Tershak has had in taking views of mountain scenery, being himself a native of the Tyrolese Alps, lends value to the publication. The price is $1.50.

"Agfa." This is a new intensifier introduced by the Actien-Gesellschaft, a one solution that is always ready for use, and will keep indefinitely. It comes in a concentrated form, 1 part to 9 parts of water, and may be employed for either general or local intensification. An experienced photographer will rarely need to have recourse to the former, but there are few negatives that may not be vastly improved by the judicious application of the latter. In conjunction with the ammonium persulphate reducer noticed some time ago, a few drops of each in a saucer, and a couple of camel's-hair brushes, or tufts of cotton, any one of average ability, provided he knows just what he wants, will have little difficulty in getting it. Lights may be intensified or reduced, shadows darkened or lightened, and, indeed, very much may by this means be done to give to negatives that have it not, that most valuable and rarest of all qualities, true values. One great advantage of "Agfa" is that its action is gradual, or accumulative, and so can be watched and stopped just when the desired result is reached.—DR. JOHN NICOL in OUTING, New York and London, November, 1899.

Photographed by CHARLES A. NAST, Denver, Col.

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ANTHONY'S
Photographic Bulletin.

EDITORS:

PROF. CHARLES F. CHANDLER, PH.D., LL.D.
W. I. SCANDLIN.

VOL. XXXI. JUNE, 1900. No. 6.

CONCERNING THE COMING CONVENTION.

WHEN the average American photographer has received the thorough technical training that forms the basis of photography, he gradually becomes conscious that art itself is a very distinct matter, and that thus far he has only a wonderful and effective tool with which to work. What he wants to make with that tool is a picture.

Looking about him, among men of his own profession, he finds that their productions vary. Some have a mechanical excellence, as it seems to him, while others evidently possess more than that, as a personal note is added to the merit of the production. When he studies the attitude of the public towards these same pictures, he finds that an ever-increasing number like best the second kind, termed by them "artistic," described as full of feeling, giving more of the personality more beautiful.

This second kind of photography is found also to result in reputation and higher prices. What people are paying for in portrait-photography is the artistic truth, preferred to the literal and unfeeling fact.

Now to get that knowledge of art—what it is and how to make it his own—is the American's enigma. By seeing pictures we can learn to understand their nature and their structure, and, discovering their basic principle, we can build up an art ourselves. But most American photographers see only reproductions of pictures. These are misleading, as they translate the picture "out of relation." Therefore, dependence upon the mass of reproductions—many bad, some good—has impeded the development of art in the large body of capable, aspiring American photographers.

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The self-teaching man, therefore, being at a disadvantage, his only way toward a fundamental knowledge lies in the opportunity to hear discussed the elements of the black and white art, to which photography belongs.

This opportunity presents itself at our coming convention, in the lecture on the subject, "What Are the Principles of Beauty in Art?" If every member will but carry away with him a clearer view of what really constitutes art, and a simple idea to work on during the ensuing year, he will have begun a true art life, a growth, and he will be prepared by his reflections, his practice, to receive the more complex lessons possible to be presented at a later time. Thus the convention becomes a school, in which the composition specialist leads and guides those whose attitude to art is receptive.

The second subject, "Does Lighting Insure Art?" will tend to dispel some erroneous ideas entertained upon the subject. This is necessary, as much must be unlearned before art itself can become a lucid perception. Until then we cannot hope to do more than imitate others; but as art always implies "creation," we must get knowledge to carry out ideas—the natural outcome of one's growth in art perceptive.

Executive Committee,
Photographers' Association of America.

Items of Interest

REPORTS of a series of very interesting experiments by M. A. Trillat, a French scientist, show that by converting the reduced silver of a negative into a laminated condition the image may be made to appear "with bright metallic luster and in vivid tints." The negative was first exposed to the fumes of nitric acid, which quite obliterated the image, after which it was cleaned, polished and hardened. The negative at this stage is said to have been quite transparent, the silver deposit being changed into a colloidal condition. It was then subjected to the action of a current of sulphuretted hydrogen, and the result was "a bright, polychromatic image when examined by reflected light," the colors often appearing as complementaries if looked at through the glass.

It is said that no relation between the color of the negative and the color of the object photographed is to be noted, but that the colors seem to vary in accordance with the density of the silver deposit. It is suggested "that the colors may be localized according to the thickness of the film, which may be made to correspond with the colors of the object.

The question of the relative exposures required for two lenses of different covering powers and apertures is one so frequently asked that a simple answer to it may be repeated to the advantage of those who are in ignorance on the subject. In any and all lenses, no matter how large or how small, the time of exposure required for any given subject is governed by the relation existing between the diameter of the diaphragm and the focal length of the lens. Thus, if a lens of, say, 4 inches' focus is used with a diaphragm, the diameter of which is one-quarter of an inch, it will be said to work at a speed of *F*/16, which is, in other words, the focal length, 4 inches, divided by the diameter of the diaphragm, $\frac{1}{4}$ inch, with the quotient expressed as a fraction; in the same way a lens of 8 inches' focus, with a diaphragm of $\frac{1}{2}$ inch diameter, will have the same speed and will, consequently, require the same exposure.

As most diaphragms are now numbered, the relative exposures required for different lenses may readily be ascertained by remembering that the makers have already done the measuring and calculating, and that any diaphragm numbered 8, 16, 32, etc., when used with its proper lens, gives the same working speed as any other lens and diaphragm numbered to correspond and working together, no matter how much difference may *appear* to exist in the relative sizes.

* * *

Speaking of the fading of star negatives, which is at this time creating so much interest in photo-astronomical circles, a well-known scientist makes the suggestion in an English publication that a permanent print be made from each negative in printer's ink as soon as the negative is secured. The *Photographic News*, commenting on this suggestion, raises the question of the permanency of the ink itself and also of the paper upon which such impression may be made. Both these points seem to be well taken, but we believe that there is another element which would render the plan impracticable, even if the permanency of both ink and paper were assured, and this is the fact that in reproducing the negatives by any process known to-day, a loss of detail would occur in making the printing plate, which would probably more than equal that resulting in the negative itself from the ordinary deterioration of many years. Of all printing methods in use it is probable that none equal the collotype and kindred processes in their ability to reproduce the details and characteristics of a given negative, and yet it is a known fact that two or more such printing plates made from the same negative with the greatest care and under as nearly similar conditions as possible may vary greatly in their rendering of the original. This is due to the fact that gelatine, which forms their printing surfaces, is affected by atmospheric conditions to an extent that has not yet been successfully overcome. When, however, the time arrives that its mastery in this direction has been achieved it will be no longer necessary to think of preserving records of the negatives in question by printing methods, as the knowledge of how to make it staple in one phase of its use will, doubtless, extend to other phases, and we shall have gelatine negatives that are permanent. Meantime, however, while the present conditions exist, will it not be wise to reproduce these negatives of faint stars as contact positives on glass plates, coated with collodion? This, we believe, will most faithfully reproduce and most surely retain intact the image revealed by the negative, and will, furthermore, prove least susceptible to atmospheric influence, which in other media might affect the delicate measurements by reason of expansion or contraction of the support upon which the record is contained.

* * *

It is evident that in, at least, one competitive print exhibition, lately held not far away, the appropriateness of title to subject pictured was not a controlling influence in the awarding of prizes, since a second prize picture of "A Winter Noonday" shows a snow-covered landscape, with trees casting long shadows across the snow. Either the title without the picture, leaving the observer to fill in the illustration from imagination, or the picture alone, with the privilege to the observer of supplying a title, would have been less cruel than is the task imposed in reconciling the two as they appeared in a current photographic publication.

* * *

The importance of the fitness of title to subject is, however, ably touched on by a writer in the same journal, who advises the use of lines from the poets to emphasize the sentiment of the illustration, and who, we think, wisely lays stress upon the value of thinking and studying out the picture to fit the lines chosen rather than in finding a quotation to fit the picture after it is made. Such a caption to a well-arranged composition seems to be the connecting link, joining sentiment to reality and giving the whole an art quality that it otherwise lacks.

* * *

A movement is under way to prepare and send to the Paris Exposition a large number of moving pictures of the various phases of work in the New York City public schools, as illustrated in the kindergarten games of the primary schools, the Little Mother classes, the calisthenic and fire drills, assembly, recreation, etc. This movement will be under the charge of the School Board, and should form a novel and interesting exhibit. It will convey a better idea of the subject in a universal language than can well be imagined otherwise.

* * *

The Bernard Medal has lately been awarded by the National Academy of Sciences of Washington to Professor Wilhelm Conrad Rontgen, the discoverer of the X-ray. The relative value in this discovery to the scientific world is indicated in this award, which is made only once in five years, and is then given to the person making the most important discovery during that period.

The Post Check Currency bill, now before Congress, seems to us to be a move in the right direction and one that should receive the hearty endorsement and support of all, and particularly of those whose business dealings are to any considerable extent affected by simplifying the methods of transmitting money through the mails. Under the provisions of this bill it is proposed to reprint all $1.00, $2.00 and $5.00 bills now in existence, and to have their faces provided with blank spaces, for name and address of the payee. The notes to be printed in the highest style of the art employed in the National Bureau of Engraving.

This means no change in the financial base of issue, but that each Treasury note, coin certificate, silver certificate or other form of currency of $1.00, $2.00 and $5.00 denomination, will be replaced with a post check note of like denomination, based on the same foundation, and existing under the same law as the note retired, thus in no way changing the present financial system of the Government. Fractional currency, in denominations of 5, 10, 15, 25 and 50 cents, are also provided for in this bill.

This money, with the new face, will pass from hand to hand in the ordinary transactions of the day. Then when one wishes to send money in small amounts, $2.00 for instance, by mail to subscribe for magazine or newspaper, pay a bill, or transact any of the multitudinous pieces of business necessary by letter, he will take a $2.00 bill from his pocketbook, write on its face the name of the person or firm to be sent to, the city and State, and affixing a 2-cent postage stamp in the square indicated (1-cent stamp for the fractional bills), sign his initials in ink, with date ; the initials and date to cross and cancel the stamp.

Thus the piece of currency which, up to this time, has passed from hand to hand as negotiable money, has been instantly transformed into a personal check on the U. S. Government for $2.00, as safe for transmission as any piece of exchange.

This may be enclosed in a letter to the person or firm desired, and when received is deposited, with other checks, in the bank, or can be collected by the receiver upon identification at bank or post-office.

◆

The Philadelphia Photographic Salon for 1900 (the third) will be held in the galleries of the Pennsylvania Academy of Fine Arts, October 21st to November 18th next. The purpose of the salon is announced as being "to exhibit that class of work only in which there is a distinct evidence of artistic individual feeling and execution, the pictures to be rigidly selected by a competent jury." No awards are made, and pictures accepted by the jury are entered without charge. Full particulars and entry forms may be had by addressing Pennsylvania Academy of Fine Arts, Broad street, Philadelphia, Pa.

◆

The forty-fifth annual exhibition of the Royal Photographic Society (England) is announced to be held at the new gallery, 121 Regent street, London, W., October 1st to November 3d of this year. The exhibition will be divided into five sections as follows : I. selected pictorial photographs; II, general professional work; III, photographic apparatus and material; IV, photo-mechanical processes of reproduction; V, scientific photography and photography in its technical applications.

This exhibition is always an important one and is open to professional and amateur workers of all countries. Entry blanks and information may be obtained from the Secretary, Royal Photographic Society, 66 Russell square, London, W. C.

* * *

THE annual exhibition of the Brooklyn Academy of Photography (which claims to be the first photographic society formed in the United States, its first meeting having been held in 1882) was held May 11th and 12th, and resulted in the display of a fine collection of work. The method adopted by the club in awarding its medals and ribbons is one not generally followed, but one which gives excellent satisfaction to the club members. All awards are made by vote of the members of the club themselves. In this way, it is claimed, the personal equation of the so-called jury system is done away with, and a normal judgment obtained.

TO THE PHOTOGRAPHERS OF AMERICA.

THIS letter is addressed, individually, to every one of you, so please consider that it is especially addressed to YOU.

What are your plans regarding the next Convention of the Photographers' Association of America? I am hoping that you intend to be represented, not only in person, but, also, by an exhibit. Whether the exhibition shall be in competition, or complimentary, is for you to decide, but you and your work should certainly be in evidence in such a representative gathering as the next Convention will be, and I sincerely trust that you will not disappoint us.

The work exhibited at that meeting will show the finest examples that the first workers in our art and the most effective and up-to-date methods can ensure. It is the most advantageous opportunity you could possibly hope for of examining the best work from the best modern sources, and of thoroughly "posting yourself in the latest methods."

If you are honestly desirous of "keeping up with the procession," you cannot afford to neglect such an opportunity. We want to make this Convention as truly representative as possible; that means that we want YOU, and we want an exhibit of your work. One or the other, if we can't have both, but we would rather have both.

So, I trust to be favored by a prompt notice that you and your exhibit may both be counted on. Don't make up your mind that you will write in a day or two; write now. The sooner you decide, the sooner we will know what to expect and arrange for.

And if there is anything more that you want to know about, do not be afraid of asking too many questions.

I trust to have the pleasure of greeting you in Milwaukee on July 23d, and till then remain, Yours fraternally.

S. L. STEIN,
President P. A. of A.

PHOTOGRAPHING CHILDREN.

By Charles A. Nast.

HOW often have we not come across the caption, "Photographs of Children Our Specialty," in the general run of photographers' announcements, and, again, how few there are who so flippantly make this claim who really possess more than ordinary fitness for the work.

Need I say that special aptitude is demanded?

The man who elects to make this the leading feature of his studio must come, first of all, equipped by Nature for the work. It is not enough to simply love children, for everybody except a misanthrope or a cynic loves them, but he must have a certain indefinable something, which for convenience we will call affinity. If the taking of a baby's picture were simply a chemical or a mechanical operation, any one could soon learn to be a good manipulator, but the truth of the matter is, very few operators have the natural capacity, tact and shrewdness so requisite to this special field of work.

Photographed by Charles A. Nast.

In the last ten years I have had many assistants under the skylight, and I have not known one who would measurably succeed as a "baby photographer," and I think they soon recognized the fact themselves when confronted with the daily problems of the routine work. But this is no disparagement of their abilities as photographers, for some of these names are in the very first rank of our profession to-day. It all goes to show, however, that something else besides the regular photographic education is necessary.

It will be borne in mind that the above remarks are applicable to a gallery where the sittings, of children alone, run from ten to twenty a day. Few people can form any adequate idea of the mental and physical strain incident to the work when it has attained the proportions designated.

For the last few years I have given special attention to the photographing of children, and especially very young babies. In respect to my pictures of young infants, I am free to confess they are not always just what I should like them to be, particularly as regards the pose. There is so much sameness about these youngsters in long clothes, due partly to the dress, and partly to the fact that they must generally be taken in a high chair, that I get discouraged sometimes with the results of my efforts at originality and unconventionalism. However, by dropping the chair in a variety of ways and changing the backgrounds, a little difference can be produced in each picture. Some years ago I used white lace curtains a great deal. By having these attached to a little pulley near the ceiling they could be drawn anywhere under the light and allowed to fall over or about any chair or accessory desired. The tiger skin and the white and black goat skins are also good, but I find customers often objecting to all these things, beautiful as they may be, just because they have seen them in so many other children's pictures. I find they want something not only new, but odd and striking, so at times I make a grab for anything in sight and use it some way. A friend of mine in Cincinnati says he sometimes takes the waste paper basket and puts the baby in that, and he says the result always gives satisfaction.

Just how far you may go into this "freak" business depends upon your customer. A lady once brought a little girl and boy about four and six years old respectively. She wanted something "cute" and different from anything in the house. I said to the little girl: "Lucy, your shoe lace is untied; put your foot out and hold your dress daintily, so: Harry, you kneel down here and tie Lucy's shoe lace." I took the picture thus and the customer was delighted. So far as the commercial side of the transaction was concerned, the thing was an immense success. But, *sub rosa*, it was not a portrait of either child. Lucy bent her head down watching Harry, who in turn had his head bent over his work, very naturally, but I could not see the eyes of either. Personally, I want to see the face in all its lovely glow of happy health and vigor. I want to see the "fire in the eye." While the pictorial side should never be neglected, the first requisite always is, or should be, a photographic portrait.

That the children's photographer should be in the very best of health and in a cheerful frame of mind goes without saying. He should also be possessed of personal magnetism. In our day those pictures appeal most to our patrons which are the result of that happy combination of conditions, where operator and subject, no matter how young, are thoroughly *en rapport*. When this bond of mental sympathy obtains, the resultant picture will show feeling. There will be life, animation, action even, and all the subtile charm of manner and personality as faithfully depicted as if the living model were before us.

The operator should be a close observer and student of human nature. At a glance he must distinguish the sick from the well child, the peevish, fretful, nervous, jolly or timid one; the one he may go up to and take by the hand, and speak to, and the one he must let severely alone. There are some, indeed, who are best managed by pretending not to take any notice of them at all.

The first step in any sitting is to be absolute master of the situation one's self. The mother or nurse, and sometimes both, should always be near, but they should not be permitted to say anything to the child, nor to make any suggestions. I always insist, politely, of course, but firmly, on this point. I say, "Let me do the talking, please," or again, "Do not say a word to the child; do exactly what I tell you to do, and let me manage the rest myself." The operator must impress people at this stage with the idea that he understands his business, and knows thoroughly what he is about. If the subject be a timid or frightened child, be careful about taking it up. If possible let the mother place it in the chair, then direct her about the disposition of bands, dress, etc. Do not be in a hurry to attract its attention. Attend to the camera, get the focus, pull the slide, have everything ready; then pretend you see something overhead, or busy yourself by tapping on the floor. You will notice the child is watching you now, and following your every move. You have its attention, and, having that, you can do almost anything with it.

Sometimes this task is given me. "Now we want the baby taken with a smile, and we don't want it any other way." Well, suppose the baby does not feel that way, and is bent on crying instead. We will say it is crying, and to stop that is the first step. Do something unusual—outlandish, if you will—but don't say a word. You cannot reason with a crying child. It requires action. You must appeal to its sight.

A few days ago, while sitting in the operating room, some people entered bringing in a crying child. It was very annoying to hear him going on. Apparently the family could not quiet him. Grabbing up a picture book, I rushed into the reception room, "Where is that good boy," I said, "here is a picture book for him," and, pushing it into his hands, I rushed out again. The effect was magical. The next minute he was laughing, and gleefully showing his book to everyone in the room. I had not said a word to the child. It is needless to say I got everything I wished of this child a few moments later.

Photographed by CHARLES A. NAST.

But let us imagine the child to be one of a different temperament. One of those quiet, undemonstrative kind. He looks out vacantly or indifferently. The face is expressionless. Here the photographer has a fine opportunity to test his strength of will. If he is magnetic he will exert his mesmeric power. I will not mention the word hypnotism, as the general public is not ready for that just yet, but I will say that the law of suggestion applies here admirably. The silliest thing in the business is to tell a child in so many words to smile. Do something, or say anything you will to make it smile, but never tell it to do so. The best way to attain your object is to suggest it mentally. To humor a child, to engage it and control it, is largely a mental operation. In some cases it may be made so entirely. To make a child responsive to the suggestions of the operator without touching it, or saying a word, is not only possible, but I maintain it is often the only way to achieve the desired end.

Proceed by fixing your mind firmly and entirely upon a chosen idea or line of action, and keep it up. You will notice in practicing this that if the mother or bystander injects a word, the mystic spell is broken ; you will feel the shock in your own brain. Therefore, do not forget the injunctions to the attendants to keep perfectly quiet, so that you may be free from all distractions and the annoyance of interruptions. While your own "mind is made up" that the youngster shall smile, you may talk to him or make a peculiar noise, or do anything else you think may help you. I often walk up to them and lightly tap their cheeks or lips, or chuck them under the chin. This always makes them smile, though they may relapse into that dull look the moment you step back to the camera; but I say, keep it up, and you will succeed almost always.

A baby's expressions are so varied and so characteristic of the child itself, that these should come forth unbidden by extraneous influences if it is possible. But in the case of very young children something must be done to rivet the attention, to direct the gaze, and to lower or raise the head. In my own practice I eschew all noise and racket, and use only a broken rattle to make the child look in the direction desired. In ninety-nine cases out of a hundred the desired effect can be obtained without any hullabaloo. Nothing, by the way, impresses a child so much as silence. By this I do not mean that death-like stillness where parents speak in whispers, and act in a way calculated to make a child think it is going to have its head cut off, but I mean there should be no hallooing or rushing around, or any extra noise to attract the baby's attention. Move about the camera quietly, humming a tune if you will, tap a chair or the corner of the stand with your finger as you go along, and you will nearly always arrest the baby's attention, and, once you have it interested, a little mental effort will do the rest.

However, our work means child study, which in turn means the habit of constant and close observation, and, of course, the opportunities for such study. Children are all unlike, and the child most difficult of all to handle is the one which has no brothers or sisters, or gets no chance to play with other children. The healthy, happy child who has plenty of playmates is the easiest of all. In a general way the children of the rich are better subjects than those of poorer parents, due to their larger opportunities and association, the result of environment.

The easiest way to a child's interest and affections is to be a child yourself. Do not make a jumping-jack of yourself, but be simple and direct as to speech and deportment. Mention something within their own comprehension. Talk about things they know all about. If you tell a story, tell it as one child would another. Have you ever observed how they tell a story? I have six children of my own (the last were twin boys), and they furnish no end of amusement and food for reflection. They all practice telling stories, sometimes the kind "making up as you go along." If you can think, feel and talk as children do, you can gain their confidence in an instant.

Photographed by Charles A. Nast.

I want to say here that I never permit myself to fondle or caress a child, and above all I never take the liberty of kissing one. This thing of taking up a strange child and slobbering all over it, and smothering it with kisses and attentions, is disgusting in the extreme, and yet plenty of people in the business have an idea that this is the way to "make up with children." It is the very worst thing you could do to make a child "take" to you. A timid, sensitive child resents this every time, even if it does not cry. Such a proceeding simply stamps the man or woman at once as devoid of all delicacy of feeling and refinement. Did you ever see a child behave this way toward another—especially a stranger? Watch two little children brought together for the first time, and see how they cultivate each other. There is a beautiful lesson for you in gentle thoughtfulness and innocent consideration.

Never place a toy or trinket in a crying baby's hands with the idea of hushing it or keeping it still, as you may have considerable difficulty in getting it back when it is quiet. But my objection is chiefly that it either goes right to its mouth, or it proves a distraction and serves to keep its hands going.

A good medium to interest dull or indifferent children is the singing voice. By this I mean to sing all the necessary directions instead of speaking them. The grown persons standing by may have their apprehensions as to the operator's sanity when they hear him sing, "Raise up your head a little bit," to the tune of "After the Ball," and "Do not frown so," to the strains of the "Serenade," but it's jolly good fun for the children. They enjoy it immensely, and the picture with brightness and the sparkle of animation is what we are after.

Let us consider the nervous children, with highly strung, delicate organizations. To such a child the ordeal of having its picture taken is a very trying one at best. It tries so hard, too. The trouble is, it is too much engrossed with the very thing in hand. Now, the first step, of course, is to get its mind off the idea that it must do, and stand and act just so. Pretend not to notice it, but still occupy yourself with it just the same. To the attendant or mother say something, but do not speak the words. Spell out the letters. For instance, "Helen looks very n-i-c-e," and generally the young one will say, "Oh, I know what you said." This breaks the ice, so to speak, and the poor, rigid little thing laughs gleefully at having discovered the ruse. The mouth is the index to the thoughts and emotions in delicate organizations, and the play of movement and twitchings are particularly noticeable in nervous children. Therefore, I never mention the word mouth, if possible. The first thing I do when subject and parents enter the operating room is to warn the attendants about this. Often it becomes necessary to speak out, and I invariably do it this way: "Now don't you folks mention m-o-u-t-h." If they are intelligent people they take the hint at once. All our trouble comes from the officiousness of friends bent on helping us, and the only trial I ever have in photographing children is to keep these well-intentioned people quiet.

If a baby persists in keeping its mouth open, place a pinch of salt on the tongue or gums. A very little will generally have the desired effect. Baby will sometimes make a wry face at first, but will soon smack its lips and look up for more, as it were. With older children having the same fault, the proper way is to induce them to talk, if possible, or to answer questions, then ask them to pronounce words ending in "m," or the sound of "m," like "drum," "crumb" "come," "mum," etc.

In conclusion, let me remark an error I see perpetrated so often, viz., the taking of a baby's picture with the face turned to the light. I am convinced this is not a small matter, since I have seen the mistake "illustrated" time and again. It is a good rule never to try the so-called Rembrandt lightings on children under two years old. But I refer more particularly to the fault of remaining on the right-hand side of the camera for all sittings. Always have the camera between yourself and the sidelight when ready to make the exposure, so that the baby will be compelled to turn its head from the light when watching you. This often necessitates walking around to the other side of the camera, and to accommodate this order have at least 8 to 10 feet of hose attached to shutter. The advantages of being able to walk some distance away from the camera while making the exposure are so many and so obvious that it is needless to enlarge upon them here. Particularly is this the case when profiles are desired.

ON THE FADING OF GELATINE NEGATIVES.

By P. C. Duchochois.

THE *English Mechanic* brought us in its last issue very startling and unpleasant news: The negatives on gelatine films fade ! This is asserted by Dr. Isaac Roberts, who states that, notwithstanding the greatest care taken in the development and fixing of his negatives of the heavens, the images of the faint stars fade out in the period of a few years; thus, a negative made in February, 1886, which, after it was taken, registered 403 stars, showed only 272 when examined in May, 1895, and another, made in March, 1886, registering then 364 stars, showed only 234 in May, 1896.

This is, indeed, very serious, considering that the negatives made subsequently, covering a period of twelve years in different parts of the earth, to construct an accurate chart of the heavens, which have required so much time, skill and labor from the astronomers engaged in their preparation and classification and which are not yet finished, may be, some of them, if not all, quite worthless after a certain time.

I have years ago pointed out in photographic publications the probable fading of the negative images, made on gelatine films, on account of the impossibility of eliminating all the traces of hyposulphite by washing and of the instability of the silver hyposulphite formed during the fixing, which decomposes almost instantaneously, and from which originates, more or less, the sulphuration of the silver forming the photographic image. We all know that the positives made on gelatine paper fade more rapidly than those made on paper prepared with another vehicle, although not all of the latter stand the test of time, and this, owing to the manner they are fixed, which is similar in every process. The case in point, however, is only the second that has come to my knowledge of the fading of the negatives made on gelatine as a medium.

In my long practice I have never observed that the collodion negatives were apt to fade, and never have I seen it mentioned in photographic publications.

I have before me when writing this article a series of collodion negatives made by Mr. Lewis M. Rutherford to photograph the solar spectrum. The range of practical sensitiveness shown on one of those plates extends from K to beyond G at 272, the maximum of intensity being near G. On both sides the impressions decrease in opacity and become almost invisible beyond F and $K \frac{1}{4} L$, still the faintest impressions are as distinct now, April, 1900, as they were when the negative was made, April 9, 1866. There is no trace of fading, although, except varnishing, no extra care has been taken to preserve them from the atmospheric and other influences.

The color sensitiveness and the intensities vary considerably with the composition of the collodion, the exposure time, silver bath and developer being the same. But here is not the place to describe the process employed to obtain the results above mentioned, which were considered the best; it suffices to say that out of the seven negatives taken not one has in the least faded.

If we except the extreme sensitiveness of the silver bromide emulsioned in gelatine and the possibility of increasing its color sensitiveness towards the red by ripening—which is of so great a value in orthochromophotography—we must acknowledge that by the wet collodion process excellent results are obtained surely and without difficulty by simple, rapid operations entirely under the control of the operator. But on account of its want of sensitiveness, which is about thirty times less than that of the ripened gelatine silver bromide, the latter is, so to say, a *sine quâ non* in astronomical photography, and still it requires an exposure of many hours to obtain an impression from the faint stars. Of course, the ordinary negative images on gelatine plates—portraits, landscapes, etc.—if they fade it is only in the delicate details, and, consequently, they remain serviceable; but in the case now in question every thing originally photographed should remain, else they become without value for recording the changes occurring in the heavens during the course of time. Hence, we must find out the causes of fading and how it can be avoided.

The causes of fading in photographs are well known by reason of the researches of T. F. Hardwich, and especially those of Davanne and Girard, made in 1859-60-61. They necessarily apply to negatives, although very few cases of deterioration have been recorded; but, besides the nature of the silver deposit forming the image, the process was quite different from that now generally employed.*

Fading cannot arise from the development. This needs no comment. The causes originate from the manner of fixing, the chemical actions resulting therefrom and from the subsequent operation, *i. e.*, the washing to eliminate the hyposulphite compound which the gelatine retains quite strongly owing to its absorptive nature when swelled. In fact, it is doubtful whether it can be entirely eliminated from that matter except by chemical means, and this is not without objection.

Let us see how the fixing is done in the process now under consideration.

After the development the plate is rinsed, then immersed in the sodium hyposulphite bath until the silver bromide is dissolved. When the bath is new, and therefore not in a state of decomposition, the only occurring chemical action is the formation of the soluble double silver and sodium hyposulphite. Hence, before washing there are in the film the sodium hyposulphite and double salt dissolved therein. If the compound were wholly eliminated the image would be permanent; if not, the silver hyposulphite, being unstable, will, in a certain period produce the sulphuration of the silver, hence a strong cause of fading.

By this manner of operation it sometimes happens that the negative comes out from the fixing bath with a yellow fog, so called, due to the alkaline developer retained in the film. To avoid it, the plate is immersed for a moment into acidified water, then rinsed, then fixed. The result is obvious, since the hyposulphite is decomposed in presence of an acid, no matter how diluted.

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* We have a negative on albumen plate, made in 1852 which has turned a little yellow, and a positive on plain paper, made by development with silver nitrate, which has also turned yellow and faded, but only in the delicate details in the lights. It was made in 1850.

The images are now generally fixed in an acid clearing bath, which was introduced in 1890, to obtain negatives free from yellow, greenish or dichroic fog, according to the developer employed. This bath is compounded with sodium hyposulphite, sodium sulphite, chrome alum and sulphuric acid. In such a bath sulphuration is inevitable, since the bath is in a state of permanent decomposition, giving rise to sulphur dioxide and unstable polythionic salts, sulphur being also deposited; the results are again obvious. Hence, whatever be the manner of operating with sodium hyposulphite as a fixing agent a cause of fading exists, and for such weak impressions as those formed by the faint stars, the writer believes that it should be discarded for a fixing agent having no action on metallic silver.

It has been said in the beginning of this article that negative images on collodion film have stood the test of time for about forty years without any visible alteration, and very likely they will remain without change for a good deal longer period. They were fixed by potassium cyanide. Why not use that salt for the fixing of gelatine negatives? There is no serious objection in doing it. However, except with the pure salt, it cannot be employed in the same way as in the collodion process, for the commercial article, containing a great proportion of potassium carbonate, gives a strongly alkaline solution which softens the gelatine film, partly dissolves it,* and, as a consequence, produces blisters, reticulation, and alters the dimension of the image. But when alcohol is added to the solution and the gelatine is previously hardened by alum this action is nullified, as it was years ago demonstrated by the savant photographer of Bellevue Hospital, Mr. O. G. Mason.

Another and more serious objection to the use of potassium cyanide is its dissolving action on metallic silver, if allowed to act for a certain period, depending upon the strength of the solution. In fact it was employed to reduce the intensity in the collodion processes. In our practice we never found that any of the details of the image were injured when the plate was washed immediately after the silver haloids had been dissolved, which requires a few seconds. Perhaps, however, the very weak impressions of some of the stars might be impaired; it is an experiment to be made.

The negatives can also be fixed by ammonium sulphocyanate as proposed by Mr. Meynier in 1863.† This salt is not poisonous, and has very little action on metallic silver, but it dissolves gelatine rapidly, which, however, is prevented by the addition of alum. Mr. P. Mercier, who made a study of fixing by the sulphocyanates, recommends that the operation be preceded or followed by treating the gelatine film with a 5 per cent. bath of alum. The fixing solution may be compounded thus:

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* According to Mr. Vidal, it does not dissolve gelatine, but only swells it considerably. See *Bulletin de la Société Francaise de Photographie*, Vol. xxix.

† *Bulletin de la Sociéte Francaise de Photographie*, Vol. ix. *Humphrey's Journal*, Vol. xiv.

Ammonium sulphocyanate	10 parts.
Alum	5 “
Water	100 “

In these conditions the gelatine film somewhat increases in volume, but the image suffers no modification.

The sulphocyanate, much less dangerous than the cyanide, has many advantages over hyposulphate. It is not altered under the influence of traces of acids, and, like the cyanide, it does not leave in the gelatine film any agent of fading after washing as usual, in water several times renewed. While fixing, it is recommended to use two baths; the second to insure a complete elimination of the silver sulphocyanate formed. The potassium salt can be employed instead of the ammonium, but it dissolves a less quantity of the silver haloids.

In conclusion, we advise the reader to experiment with these two fixing agents, and ask him to report through the BULLETIN the results obtained.

THE "Deutsche Photographen Verein," K. Schwier, President, will hold its annual convention and exhibition this year in Berlin, from July 31st to August 4th, but the exhibition, under the protectorate of the German Empress, will be open until August 26th. According to the programme, a cordial invitation is tendered to photographers of foreign countries, and in particular to the members of the Photographic Association of America, who are requested to send specimens of their latest work. Photographs, made over a year ago, and already exhibited, will be admitted, but they must be designated as such, or they will be excluded from competition. If the exhibitor will allow his pictures to be embodied into the regular traveling portfolio of the "Deutsche Photographen Verein," no charge for space will be made. Full particulars may be had of Ottomar Anschütz in Berlin, Vorsitzender des Arbeitsausschusses.

RAILROAD FARES TO CONVENTION.

UP to time of going to press the BULLETIN has not been informed as to special excursion rates to Milwaukee and return, and is, therefore, unable to publish any information on the subject. We would advise any who propose to attend the Convention and desire to inform themselves in this matter to address Mr. J. George Nussbaumer, Secretary, Photographers' Association of America, Buffalo, N. Y.

It is expected that full information will be ready for publication in the July number of the BULLETIN.

Photographed by CHARLES A. NAST.

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DIRECT ENLARGEMENTS IN WARM TONES.*

THE convenience of working with artificial light and the manifold improvements which the bromide of silver gelatine paper has undergone have played an important part in the introduction of bromide of silver enlargements. Still, notwithstanding their fine appearance and excellent qualities, there seems to be something wanting, and that is a tone similar to that on printing-out papers. To remedy this, uranium and sulphur toning have been tried. But uranium toning is very uncertain, and a good picture may be spoiled by its use, and sulphur toning cuts the life out of every silver picture, although this change is not so soon visible in the brown tones. Aside from this, the so-obtained brown tones are not sufficiently agreeable and do not wholly meet the requirements expected of them.

If now we ask, are there no means of obtaining agreeable warm tones by direct enlargement? we can fearlessly answer, certainly, there are such. Long before the bromide of silver gelatine paper was practically applied, there was a gelatine enlargement paper, which contained chloride of silver instead of bromide of silver. This paper is in general not so sensitive to light as bromide of silver gelatine paper, but its sensitiveness is, however, by proper preparation still quite considerable. It has the agreeable property that, if longer exposed than would be necessary for obtaining a black picture, and by the application of a diluted developer, a faultless picture is obtained in warm tone. This makes it possible to obtain by the direct process a picture which, with regard to its tone, can hardly be distinguished from a picture on printing-out paper, and which possesses many advantages in comparison with a picture made by the aid of an enlarged negative.

The practical execution of this process has encountered many difficulties, owing to insufficiency of light sources, but these may at the present time be considered as surmounted. Until recently kerosene light was exclusively applied for bromide of silver enlargements. The consequence was that it could not be used for chloride of silver gelatine paper, owing to the long time of exposure necessary, and because of which the pictures made from strong negatives were in danger of becoming hard. To obtain warm tones the operator was therefore compelled to work in daylight. But daylight is such an irregularly acting light-source, that in introducing the sensitive bromide of silver gelatine paper, even the poorest artificial light source was preferred and substituted.

At the present time, however, when we possess in the acetylene light an extremely actinic, uniformly acting light-source, it might be proper to call attention to the advantages of chloride of silver gelatine paper for special enlarging purposes. Indeed, if we consider how much stronger the acetylene light is in its action than the kerosene light, we will have to come to the conclusion that by application of a highly sensitive chloride of silver gelatine paper and a thin negative

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*From *Photographische Chronik.*

the time of exposure is hardly to be estimated. To explain this we have to look into the conditions a little closer.

Optical brightness and chemical intensity are two different things. One light may be much brighter optically than another, and still it may lack in chemical energy, and thus only such data become important to us as refer only to chemical action. According to Walmsley, the chemical action of the acetylene light is so great that it surpassed that of daylight at about one-quarter of direct sunlight. At such an extraordinary energy such an essential shortening of the time of exposure can be obtained by using the new extremely rapid anastigmatic objectives that it will not be longer than with kerosene light and well diaphragmed objective in connection with bromide of silver gelatine.

It cannot be denied that with regard to the conditions of the enlargement, when using chloride of silver gelatine paper, we are still somewhat restricted—that is, we cannot go beyond four or five times the size of the original. But this may change considerably if we succeed in producing a more sensitive paper. It does not matter whether it is pure chloride of siver gelatine paper or chloro-bromide of silver gelatine—the main point is, that at increased sensitiveness, warmer tones can be obtained.

But upon the ordinary bromide of silver paper warmer tones can also be obtained without the application of nitrate of uranium or sulphur toning. If a bromide of silver paper is exposed considerably longer than the normal time, and is treated with a developer, which, instead of the usual bromide of potassium, contains chloride of potassium as retarder, the silver precipitate will pass, under the influence of the chloride, from the black into the brown modification, as in a similar way it can be observed in the platinum print with chloride of mercury addition. In this way one is enabled to obtain an agreeable sepia tone by simple development. As developer, oxalate of iron comes into consideration, and the following formula is proposed:

SOLUTION I.

Oxalate of potassium	330 grams.
Water	1 liter.

SOLUTION II.

Chloride of potassium	130 grams.
Water	1 liter.

SOLUTION III.

Sulphate of iron	24 grams.
Citric acid	2 "
Bromide of potassium	2 "
Water	500 cubic centimeters.

For use, mix:

Solution I	20 parts.
Solution II	5 "
Solution III	5 "

The more that is taken from Solution II, the browner the tone will be, but the exposure required will be so much longer.

A subsequent change of the black nitrate of silver precipitate to one of a lighter coloration appears theoretically as easily possible, and can also be executed practically, but the result is not satisfactory, and it is better to make no use of it, particularly as the process is somewhat intricate.

Recently, however, the property of the reduced silver to attract and hold other bodies in fine distribution has again been used for toning purposes, which resemble the uranium toning, but allow a greater modification.

Copper salts, in connection with ferricyanide of potassium, when they come in contact with a picture of metallic silver, produce a precipitate which possesses a red color. But this precipitate is not very dense, and, as the silver is somewhat attacked in the process, the picture has to be reduced. By application of the oxalate of copper, which is easily soluble in the oxalate of potassium, the conditions are different. A sufficiently dense precipitate being obtained, and the picture is not reduced. This bath tones, however, very slowly, and one is obliged to make an addition of ammonia, which will accelerate the toning.

Eder has lately essentially improved the toning method with copper salts, originally mentioned by Namias.

The toning bath to be applied is prepared by dissolving in a liter of water 5 grams crystallized sulphate of copper, and adding a saturated solution of carbonate ammonia, until the originally light-blue precipitate of carbonate of copper dissolves. A solution of 12 grams red prussiate of potassium in 700 cubic centimeters of water is then added. If another precipitation takes place, powdered carbonate of ammonia is added, until the precipitate dissolves into a dark-blue liquid.

The picture treated with this assumes a warm, brown tone, similar to that in the uranium toning process. This tone becomes warmer, and appears finally as almost cherry red. If the red print is treated with a weak mixture of water and ammonia, the tone passes into a reddish violet, while by application of a very weak bath of 1 part sulphuric acid and 500 parts of water, the tone will become of a brick-red color.

The red picture can be changed by washing it well and treating it with a chloride of iron solution, whereby it assumes a red-brown tone.

This toning method has the advantage that the bath is less poisonous than the uranium toning bath, and that the picture can be thoroughly washed. The coloration will not only resist a long washing, but it is also not attacked by carbonated alkalies or acids to such an extent that a reduction takes place. The rotation of the tones is such that first the brown and later on the red tones will result.

Generally, however, enlargements of considerable size have a better effect in black than in any so-called sepia tone.

Translated by

HENRY DIETRICH.

THE COLOR OF THE NEGATIVE.

By P. Hanneke.

THE films of negatives made on bromide of silver gelatine dry plates do not always show the same color. The color of the negatives is generally from gray to black; frequently it is also of a bluish or brownish shade, and sometimes even green. The cause of these different colors in the negative films is not to be looked for solely in the developing substance, which is applied, but is dependent also on the quality of the bromide of silver plate and on the composition of the developing substance.

The emulsion film of the many plates in the market varies essentially. Some plates have a thick, others a thin, film. They differ also in the relative quantities of silver they contain. These facts alone play an important part in developing and fixing. They affect the time required for developing and fixing, and strongly influence the color of the reduced silver-picture. These are by no means all the points governing the character of the negative, but we will for the present pass them and look into the action of the developing substance.

Most of the developers at present in use consist of: Developer substance, sulphite of soda and carbonate or caustic alkalies. For the composition of the developing solutions the general rule is that the more developer substance, the stronger will be the negative; the more alkali, the quicker the development. The addition of sulphite of soda affects the durability of the developer substance. Solutions without sulphite of soda will deteriorate very quickly. They gradually lose their developing capacity, and finally do not develop at all.

But the sulphite of soda in the developing solution has also a great influence upon the color of the negative.

Let us look at these appearances first in the pyro developer, and for this purpose we will prepare a pyro soda developing solution after the well-known formula:

Solution I.

Crystallized sulphite of soda	50	grams.
Pyrogallic acid	7	"
Water	250	"

Solution II.

Crystallized carbonate of soda	25	grams.
Water	500	"

If we now develop a negative as usual with 1 part Solution I and 2 parts Solution II and fix in a 10 per cent. fixing soda solution, it will under normal conditions show a black-gray color. If we reduce the quantity of sulphite of soda in the above formula 25 grams, the result will be a black-gray negative, with a shade of greenish brown. When the plate is washed the color tone will change to a decided olive green, while if we leave out the sulphite of soda entirely, the result will be a yellowish green-brown negative. This ugly color becomes more intense during the washing of the negative, and the gelatine ground finally becomes yellow.

These experiments show that it is not only the quantity of sulphite salt in the developer, but also the duration of the consequent washing, which is of influence upon the color of the negative. During drying the several color shades do not change very much.

Analogous color appearances were also found upon chloro-bromide of silver plates (diapositive plates).

On bromide of silver paper the pyrogallic acid developer, with one-half of sulphite, will not give pleasing prints; the tone of the pictures is ugly and the underground assumes a brownish color. The tests with pyrogallic acid have proven that this developer requires a considerable quantity of sulphite of soda (much more than hydrochinon or pyrocatechin) to produce a pure gray-black picture.

We come now to the hydrochinon developer, with the following formula:

Solution I.

Crystallized sulphite of soda	40	grams.
Hydrochinon	6	"
Water	600	"

Solution II.

Potash	60	grams.
Water	600	"

For use, equal parts of Solutions I and II are mixed. This composition furnishes negatives of pure gray-black color. Even when the quantity of sulphite of soda in the foregoing formula was reduced to 12 grams, the color of the film remained gray; the washing also caused no change.

If the sulphite of soda is left out entirely, negatives are obtained of a loamy, rust-brown color with clear lights, the gelatine showing only very little discoloration. At the subsequent washing the character of the negative hardly changes; the high lights are not, as in the pyro developer without sulphite, strongly colored yellow, but retain their clear appearance.

The developing process of the hydrochinon developer, free from sulphite, proceeds more quickly than in the solution with sulphite salt.

The dark-brown negatives print very slowly and dark. To obtain negatives fit for printing, the development must not be extended too far. For diapositives the color will hardly find favor, the rust-brown having frequently a disagreeable shade of green.

The pyrocatechin gives still other color appearances, differing from those obtained with pyrogallic acid and hydrochinon. We have adopted here Eder's formula:

Solution I.

Pyrocatechin	5	grams.
Crystallized sulphite of soda	20	"
Water	250	"

Solution II.

Potash	25	grams.
Water	250	"

Equal parts of Solution I and II are mixed. The normal color of the negatives with this solution is a pure gray-black. The sulphite quantity may here also be considerably reduced without obtaining yellow or brownish negative films. If the sulphite of soda is left out entirely, negatives of a very handsome purple-brown color, with clear lights, will be the result. This handsome purple color disappears gradually during the washing of the plates; the moist plates lose the purple color in the air, even without prolonged washing, the color passing into gray-black, with a shade of purple. If the quantity of potash is increased in the developer, a more intense purple color is obtained.

The pyrocatechin developer without sulphite salt has the advantage that it works quickly, and that the negatives can be kept very thin, the light purple color covering it pretty well. The character of the negatives reminds one of collodion emulsion plates. They possess an excellent modulation and clearness, and print very rapidly. The latter circumstance is of great advantage for printing on dark days.

Eikonogen and Metol without sulphite salt give clear negatives of gray-black color, with a faint greenish or brownish shade. With short washing of the plates the color shade is more brown. The following formula was used:

For Eikonogen—

Solution I.

Eikonogen	5 grams.
Water	300 "

Solution II.

Potassium carbonate	10 grams.
Water	100 "

Three parts Solution I are mixed with one part of Solution II.

For Metol—

Solution I.

Metol	3 grams.
Water	300 "

Solution II.

Potassium carbonate	10 grams.
Water	100 "

Here, also, 3 parts Solution I are mixed with 1 part of Solution II.

At normal exposure of the plates the eikonogen gave negatives of stronger density, but lacking detail in the shadows. The metol negative, if developed just as long (three minutes), is pretty thin, but has a better modulation.

These experiments show sufficiently the great influence of the sulphite salt in the developer solutions, and also that the action is not equally strong with all developer substances. Regarding the colors, there are likely to be differences in the shade according to kind of plate used

Translated by
HENRY DIETRICH.

GLEANINGS FROM GERMANY.

By Henry Dietrich.

PRINTING Process with Nitro-Prusside Salts after Valenta.—West recommends the following: Ordinary, plain paper is coated with a solution of:

Nitro-prusside ammonium	25 grams.
Citrate oxide of iron and ammonia	30 "
Water	100 cubic centimeters.

To change the tone, other substances may be added; for instance, citrate of magnesia or citrate of zinc. In place of the nitro prusside of ammonium the corresponding potassium or soda salts may be used, but they will give a less sensitive preparation. The prints are washed and treated in the following solution:

Acetate of lead	2 grams.
Water	100 cubic centimeters.

They are then again thoroughly washed. Valenta worked this formula with the following result: The sensitiveness of the paper so prepared is only one-third that of albumen paper. A greenish brown picture results, whose whites are not completely clear. In the development with acetate of lead the picture will color dark violet, and a color will form which resembles the ordinary tannin pictures. With citrate of magnesia a more blackish tone will form. An essentially greater sensitiveness was found by Valenta if in the above-mentioned formula green citrate of iron and ammonia in connection with nitro-prusside was applied, the pictures being then of a more blue color. Platinum effects cannot be produced in this way.

Sulphites in Fixing Soda.—To discover sulphite in a solution of hyposulphite of soda, the latter is made alkaline by the addition of chloride of strontium or nitrate of strontium, well shaken, and then filtered. Sulphite of strontium, hard to dissolve, will form and remain upon the filter. For a quantitative determination the mixture is treated with an iodide solution in the ordinary way, while the sulphite is separated by the above treatment and the hyposulphite of soda is determined in the filtrate by iodine solution. The difference gives the quantity of the sulphite.

Restoration of Old Daguerreotype.—L. Belitzki lately succeeded, by the following method, in restoring an old daguerreotype, which had suffered so much that it was unrecognizable: To a cold solution of 1 gram cyanide of potassium in 200 cubic centimeters of water 2 cubic centimeters of a solution of 1 gram iodine and 3 grams iodide of potassium in 100 cubic centimeters of water were added, and in this solution the picture, cleaned as described below, was bathed. After a few seconds the fog had entirely disappeared, and a clear picture remained. The old method of clearing the picture with boiling cyanide of potassium was previously tried, but was not successful. The clearing of the picture is done in the following way: Take it carefully out of the case, without touching the picture surface, remove all paper adhering to picture on the reversed side, and clean that part with warm water. Dust on the face is carefully removed under water with a cotton tuft, and without the slightest pressure. After the picture has been taken from the water it is flowed with alcohol, and is then rinsed with water until all streaks have disappeared. It is now put into the above-mentioned iodized cyanide of potassium solution, from which it is taken at once after the disappearance of colors and fog, and is then washed under the faucet. Finally, it is washed in distilled water and dried carefully over an alcohol flame, holding it with a pair of nippers by one corner in such a way that the water will run off without forming drops. More heat than just enough for drying should not be applied. The vapors of the iodine-cyanide of potassium solution being very poisonous, it should be removed immediately after use.

Sulphate of iron solution for the oxalate developer will keep for nine months if 2 cubic centimeters formalin solution (40 per cent.) and a few drops of oil of cinnamon, cloves or peppermint are added to 500 cubic centimeters of sulphate of iron solution.

TONING WITH COPPER FERRICYANIDE.

By A. W. M. Dickins, in "The Amateur Photographer."

MANY workers consider that the cold, black tones of bromide prints are not suitable for some subjects, and many efforts have been made to produce a warm-toned bromide print which should be permanent. A large number of the pictures at the recent exhibitions have been bromide enlargements, the black tones of which have been modified in various ways to a sepia or warm brown. Until recently, there were only three practical ways of accomplishing this, all of which yield prints with tones of only doubtful permanence. The three processes generally used are: (1) Toning the black image with a solution of uranium nitrate, potassium ferricyanide and acetic acid. (2) Toning the print in a hot mixture of alum and hypo solutions. (3) Increasing the exposure and adding bromide and ammonium carbonate to the developer.

The last two processes are tedious, and yield tones which, like those given by uranium, can hardly be called permanent, in face of the many letters which have appeared on the subject during the past few years in the photographic press.

Quite recently, Mr. Ferguson brought before the Royal Photographic Society a process for toning bromide prints, which is simple, easy and certain in its action, yielding exquisite tones, far more permanent than any given by the three preceding methods.

Mr. Ferguson's formula is:

10 per cent.	neutral potassium citrate solution	250 parts.
10 " "	copper sulphate solution	35 "
10 " "	potassium ferricyanide solution	30 "

Mix in the order named.

I have found that it is more convenient to dilute this solution with an equal bulk of water, to bring the action more under control. The only difference made by the addition of water is to slow the toning. Precisely the same tone may be obtained on a print cut into halves by toning one-half in Mr. Ferguson's bath, which is very rapid, for, say, two minutes, as is obtained by toning the other half for four minutes in the same bath, diluted with an equal bulk of water. This causes the operation to be more under control, especially when several prints are required of similar tone.

This slowing of the toning solution is curious, as it is different to the action of developers diluted with an equal bulk of water, for if a plate which has been exposed be cut in half, and one-half developed for say two minutes in an undiluted developer, and the other developed for four minutes in the same developer, diluted with an equal bulk of water, it is a well-known fact that the one developed for four minutes will be thinner and flatter than the one developed for two minutes in the strong developer.

We now come to the *modus operandi* of toning with this copper ferricyanide bath. I prefer to use the dry chemicals and weigh up the amount required each time, as potassium ferricyanide does not keep well in solution. The formula I use is:

(*a*) Neutral potassium citrate	70 grains.
(*b*) Copper sulphate crystals	10 "
(*c*) Potassium ferricyanide	9 "
Water (to)	4 ounces.

Dissolve in the order named, and make up bulk to 4 ounces with water.

The prints should be developed slightly darker than the tone finally required, and well washed until free from hypo, as the ferricyanide in combination with any hypo which might be present forms the powerful and well-known Farmer's reducer.

The wet or dry prints, thoroughly freed from hypo, are now immersed in the above solution, taking care that all air bells are removed, or a black, untoned patch would result. The prints should be thoroughly immersed in the solution, and kept moving, as in toning ordinary P. O. P. In about a minute the cold black of the bromide print will change to a warm black, in two or three minutes to a rich purple brown, and the toning will then proceed through various stages of brown, red-brown, and, finally, if carried far enough, to a brilliant red chalk, which is not suitable for all subjects, but is very effective for some portrait studies and similar subjects.

As soon as the desired tone is reached, the print should be at once immersed in a dish of clean, cold water, and washed for an hour. Unlike uranium tones, the color does not alter on prolonged washing in tap water, which is always alkaline; consequently, a thorough washing may be given, obviously increasing the permanency of the image. Even strong ammonia has but little effect in altering the color or weakening the image. The bath also possesses the additional feature of not staining the high lights. When the prints are washed they may be hung up to dry, the tone becoming slightly darker when dry. Lantern slides and transparencies may be toned in the same bath as is used for prints, the procedure being exactly similar. The colors obtained are much more effective on the screen than transparencies treated with uranium, or when ammonium carbonate and bromide is added to the developer, as they are more transparent, and the grain is much finer; consequently they transmit more light.

It is curious to note that when a negative is treated in a similar manner, although the deposit may be a brilliant red, yet the opacity of the negative for printing purposes is actually reduced, as can be shown by cutting a negative into halves, treating one in the above manner, until of a red color, and printing the two halves together, when the red half will be found to print the quicker. The bath will tone prints on "gaslight" paper, such as velox, dekko, gravura, etc., as satisfactorily as it does ordinary bromide prints, the range of colors being the same. I feel confident that all who give this new method a fair trial, possessing as it does the virtues of ease, certainty and permanence, with entire freedom from stain, will be more than satisfied with the results.

* * *

BEFORE this number of the BULLETIN reaches the hands of its readers, the eclipse will have passed into history. It is greatly to be hoped that important photographic records will have been secured, and much interest is manifested in this work by the laymen of the craft, *i. e.*, those not engaged regularly in astronomical photography. We shall be glad to record the successes of our subscribers along this line.

PRINTING ON IVORY.

ANSWERING a query by one of the BULLETIN subscribers, we reprint from *The Silver Sunbeam* Duncan's process of printing on ivory, which is as follows:

" PRINTING ON IVORY—COLLODIO-CHLORIDE PROCESS.

" Very much depends upon the ivory having a smooth or polished surface. There are various methods of obtaining this. A nice surface can be obtained by rubbing the ivory with a piece of wash leather, occasionally dipped in putty powder. When polished, immerse the ivory in a thin solution of spirit varnish, and dry gently over a gas stove or before the fire. Any kind of varnish will do that is white and clear. Then prepare the following:

" French gelatine	1	dram.
" Loaf sugar	½	"
" Water	1	ounce.

" Coat one side of the varnished ivory (the polished side) by pouring collodion fashion, or with a camel's-hair brush. The gelatine solution should be strained through fine muslin or filtered through cotton wool until very clear. When dry, coat with collodio-chloride of silver in the darkroom; dry, and print deep; wash, either under the tap or in a flat dish. Any old toning-bath will do to tone the picture. Fix in a weak solution of hypo; say—

" Hyposulphite of soda	2½	ounces.
" Water	20	"

" Very beautiful pictures can be obtained by the above."

The following sensitizing bath is recommended by G. Wharton Simpson, and is said to work excellently with the above formula:

" Mix three stock solutions:

" No. 1.—Nitrate of silver	1	dram.
" Distilled water	1	"
" No. 2.—Chloride of strontium	64	grains.
" Alcohol	2	ounces.
" No. 3.—Citric acid	64	grains.
" Alcohol	2	ounces.

" Now, to every 2 ounces of collodion add 30 drops of No. 1 solution, previously mixed with 1 dram of alcohol; then 1 dram of No. 2 solution, gradually, shaking well at the same time; lastly, half a dram of No. 3 solution. In a quarter of an hour it will be fit to use."

All copy for July issue must be in our hands by June 15th at latest.

OBITUARY.

THE record of deaths in the Profession during the past few weeks is a long one, and contains the names of several prominent people who will be sadly missed, and whose places it will be hard to fill.

Mr. HORACE RUDE, of Springfield, died suddenly at his home, on the 3d of April last. Mr. Rude had been for more than forty years in business, which he had steadily developed and improved during his busy life.

* * *

Mr. FRANK ROWELL, whose name has been so intimately connected with the history of photography, especially in relation to dry plates, died at his home in Brookline, Mass., on the 11th of May. He was for many years a member of the firm of Allen & Rowell, of Boston. Mr. Rowell was born on the 2d of February, 1832.

* * *

Mr. F. M. ZULLER, of Annapolis, Md., died suddenly on April 15th. He was sixty years of age, and had for many years conducted a photographic gallery at the Naval Academy, and also at Richfield Springs, N. Y.

* * *

Mr. ANDREW WOODS, Superintendent of the Gun Construction Department at the Washington Navy Yard, died on the 17th of April, at the age of sixty-three years. Mr. Woods served throughout the Civil War, holding for a time the position of Chief Photographer to the Army of the Potomac.

* * *

Mr GEORGE R. ANGELL, of Detroit, one of the oldest and most prominent among the stock dealers of this country, died suddenly of heart failure, on the 18th of April. The photographers and stock dealers of Detroit closed their several places of business during the funeral services, attending it in a body. The following resolutions of sympathy were also adopted :

Whereas, God in his all-wise judgment has seen fit to remove from among us George R. Angell, one of the pioneers in the business of photography in this city and State; and

Whereas, we still have and cherish his lovely characteristics, unselfish example and wise counsels, and whose integrity, faithfulness, and kindliness have made him respected and loved by all those with whom he came in contact in business, in social life and in the bonds of friendship; therefore, be it

Resolved, That we as a body and individually deplore the loss of our esteemed fellow citizen, and extend to his bereaved family our sincere sympathy.

D. D. SPELLMAN, WM. H. ALLEN,
C. L. WEED, C. M. HAYES,
Committee.

Mr. ORON MONROE, a prominent photographer of Dunkirk, N. Y., died on the 18th of April in his seventy-fifth year.

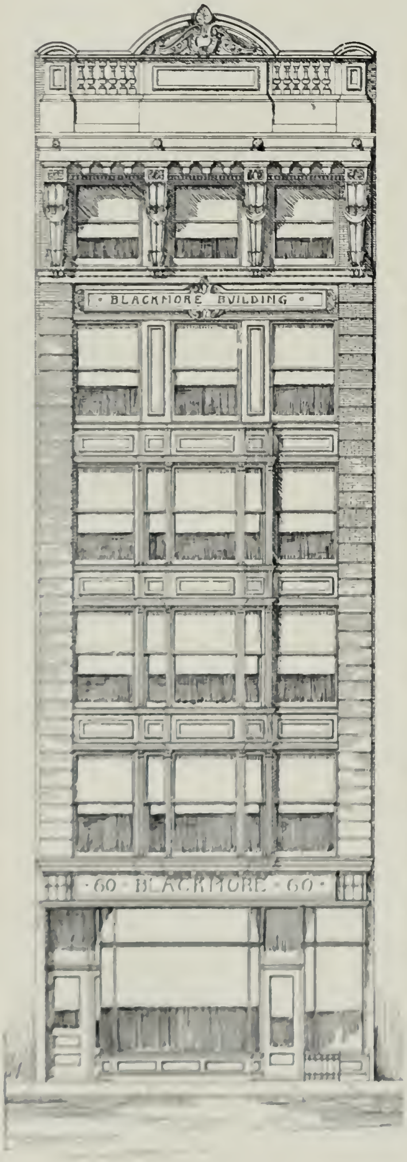
* * *

Mr. JOHN YATES, a well-known photographer of Pittston, Pa., died on April 19th at the age of sixty-nine years.

Mr. Marsena Cannon, an old-time photographer, died at Salt Lake City, Utah, on April 29th at the advanced age of eighty-seven years. Mr. Cannon was born in Massachusetts, but had lived in the West since 1850, at which time he opened a gallery in Salt Lake City.

* * *

Mr. Churchill D. Webster, a lineal descendant of Daniel Webster and a well-known photographer of Richmond, Va., died in that city on May 14th.



THE BLACKMORE PHOTO AND ART SUPPLY COMPANY OF NEWARK.

THE success and progress achieved by the above-named company may be gauged in a measure by the fact that on the 15th of June they will move into their own new six-story building, at 60 Academy Street, Newark, as shown in the accompanying illustration. The new premises will be fitted with steam heat, electric elevators, and all the most modern conveniences. The Blackmore Company will occupy the store and three other floors of the building, and will rent the remaining floors for business purposes. The prompt and careful attention to the wants of customers, which has built the business up to its present condition, may be depended upon to add to it in its new home.

SOCIETIES

AN exhibition of lantern slides was given by the Photographers' Club of Baltimore, on the night of April 17th. This Club is very successful, having a membership now of over 60, and rapidly increasing. The officers are as follows: Dr. F. Slowther, President; P. M. Reese, Vice-President; H. Millhouse, Secretary; E. M. Barker, Treasurer.

* * *

THE annual meeting of the St. Paul Camera Club was held on April 10th. All the officers were re-elected, as follows: W. E. Johnson, President; W. J. Sonnen, Vice-President; H. A. Clifford, Secretary; F. H. Lloyd, Treasurer. The club is in a flourishing condition, the reports showing that now, at the end of its first year, the membership exceeds 120.

* * *

THE semi-annual election of the Merchantville (N. J.) Photographic Society was held early in April and the following officers elected: J. C. Slater, President; Dr. J. D. Lawrence, Vice-President; H. S. Matthews, Secretary; P. R. J. Young, Treasurer.

* * *

THE annual meeting of the Akron (O.) Camera Club was held on April 11th. A large number of lantern slides were exhibited by Walter K. Means, and officers for the ensuing year were elected, as follows: Prof. C. M. Knight, President; E. W. Terrass, Vice-President; J. D. Palmer, Secretary; and E. J. Hosking, Treasurer.

* * *

THE Camera section of the Hamilton Association, Hamilton, Ont., held its annual meeting on the night of April 17th, and elected the following officers: A. H. Baker, President; J. K. Heddle, Vice-President; D. A. Souter, Secretary; Geo. Lees, Treasurer. The club has now a membership of nearly 70.

* * *

THE annual meeting of the Camera Club, of Winnipeg, Man., held its annual meeting on April 10th, and elected officers for the ensuing year, as follows: F. W. Drewry, President; F. J. C. Cox, Vice-President; S. W. Smith, Secretary; F. W. Gill, Treasurer.

The Bulletin would acknowledge the courtesy of the Newark Camera Club in sending invitations to its Annual Print Exhibition, held on the 23d, 24th, and 25th of April last. We regret that it was impossible to be present.

* * *

The annual meeting of the Philadelphia Photographic Society was held on April 11th, and the following officers were elected: Robert S. Redfield, President; George Vaux, J., and Walter P. Stokes, Vice-Presidents; E. Stirling, Secretary; A. W. Robinson, Treasurer. The reports showed the Society to be in very good condition, with a substantial balance in the treasury and a membership of over two hundred and sixty. An interesting paper on "Telephotography" was read by the Rev. F. S. Dobbins, who illustrated his lecture by several fine examples of work, showing the value of the telephoto attachment for long-distance work.

* * *

The East End Camera Club, of Cleveland, O., was organized on April 2d, and the following officers were elected: L. A. Kelly, President; E. Sanderson, Vice-President; A. L. Smith, Secretary; E. A. Roberts, Secretary. Meetings are held on the first Tuesday evening of each month, and an annual exhibit will be held in April.

* * *

The Annual Meeting of the Capital Camera Club, of Washington, D. C., was held on May 5th, and officers for the ensuing year were elected as follows: W. C. Babcock, President; Dr. W. P. Herbert, Vice-President; W. F. Peabody, Secretary; Dr. W. E. Diffenderfer, Treasurer. The report of the Club showed that the year just completed had been very successful, and arrangements were made for the Annual Exhibition of Prints, to be held during the week beginning May 28th.

* * *

The Savannah (Ga.) Camera Club held its annual meeting on May 2d, and elected the following officers for the ensuing year: B. J. Apple, President; Barron Carter, First Vice-President; G. A. Gregory, Second Vice-President; Percy Sugden, Secretary. The report of the officers made an excellent showing for the Club, which is one of the largest and best equipped in the South. It is free from debt, and has a membership of over a hundred.

* * *

The Annual Meeting of the Manchester (N. H.) Camera Club was held on May 3d, and the following officers were chosen: J. E. Currier, President; J. B. Murray, Vice-President; C. L. Harmon, Secretary; F. Kellogg, Treasurer. The Club is in fine financial condition, and the members show great interest in its success.

* * *

The organization of the Century Photo Club, Erie, Pa., was effected on April 30th, and the following officers were elected: C. E. Bird, President; Alfred Ostrom, Vice-President; Miss Maud Keller, Secretary; P. J. Moline, Treasurer.

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ANTHONY'S

Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D.

W. I. SCANDLIN.

Vol. XXXI. JULY, 1900. No. 7.

FUZZITYPES.

THERE is noticeable in the work exhibited by the various amateur photographic organizations and elsewhere, during the past year, a growing tendency to get as far away as possible from what most people of intelligence have always believed to be the best and distinguishing characteristics of photography, and an increasing effort on the part of many, some of whom have done good work in the past, to pass off as good photography examples that, in their own earlier days of experimenting, would, without hesitation, have been consigned to the ash barrel. If this movement were to be taken seriously, it might be viewed with some concern, but when its devotees go to the extent of producing a so-called portrait (full-face), in which it is a matter of doubt whether the eyes of the sitter were open or closed when the exposure was made, we are inclined to the belief that homœopathic treatment will shortly prove effective, and that a little more of the same kind will work a permanent cure. It is not difficult to trace the inception and growth of this disease when it is remembered that the production of anything striking and out of the usual course causes comment, and if the unusual happens to be produced by a person prominent in his particular sphere, it finds many admirers. Furthermore, this admiration may in some cases be fully justified by the conditions, and a photograph, for instance, that has been controlled by the maker is quite easily possible of showing excellent points. Such a print however, must be from hands of an expert worker, endowed with a sense of the fitness of things, coupled with the art instinct, and the control, either in exposure, development or printing, or in all those stages must be with the purpose of obtaining some particular effect in the finished picture. The trouble comes, however, from the fact that, as a flock of sheep has from ancient time shown a marked tendency to follow its leader, so one such effort as has been noted is blindly attempted by others, who, seeing only the striking result and failing entirely to analyze its reason for being, proceed to perpetrate similarly

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striking results, which, however, being entirely without motive or reason for existence, become grotesque in the extreme.

It is to be hoped that the pendulum has swung far enough in this direction and that it will shortly begin its return to a normal condition of things, under which portraits of people possessing the customary organs of sight, smell and hearing may be made to show these features as they appear to the eye of the observer, and not as they may seem to appear to a disordered mind, seeking the grotesque in Nature.

We do not, in taking this stand, wish to discourage any honest attempt on the part of those who, having in view a special purpose to work out, employ unusual methods to reach the desired end, for all such work is of advantage in the evolution of photography; but what we do wish to emphasize is the thought that all such work should be wrought with some fixed purpose in view, and that results when so obtained shall be honestly labeled and known for what they are. In this way only, will they have value, while, under any other guise, they must pose as examples of freak photography.

We appreciate the work of those who, in following out a well-thought plan, have achieved success, but deprecate the habit which is so prevalent among us, of copying the examples of others, without trying to connect their successes with the motives underlying them, and it is in such cases as these we realize that "a little learning is a dangerous thing." Individuality in any line of work pays, and individuality in photography, whether portraiture or pictorial work, should be cultivated to the fullest; but in making the most of our own individual talents, let us also use to the best possible purpose the good qualities of the tools with which we work, and see to it that we are not responsible in bringing reproach upon the good name of photography by the production of freaks, posing as pictures.

OBITUARY.

THE death is announced, on the 19th of May last, of William Sidney Howson, a well-known photographer of Mount Vernon, N. Y. Mr. Howson was born in Australia fifty-three years ago, and had been in this country for twenty-seven years. He leaves a widow and one daughter.

* * *

HIRAM H. FRYE, at one time considered one of the most artistic photographers of California, died in Sacramento, Cal., on the 21st of May, at the age of fifty-three years.

* * *

J. D. EDWARDS, of Atlanta, Ga., a leading photographer and prominent member of Masonic and other orders, died at his home June 6th. Mr. Edwards had been located in Atlanta for the past fourteen years, and his death will be felt by many outside the circle of his personal and professional friends.

Items of Interest

THE recent eclipse of the sun was photographed by many observers in all parts of the country from which it was visible, and probably interested and engaged a larger number of scientists and amateurs than any single phenomenon has ever done.

The results are not yet all recorded, although enough is known to justify the belief that some extremely valuable records were obtained.

A noticeable feature of the observation was to be found in the interest manifested in circles outside of strictly scientific photography, and in the results obtained among photographers who up to that time had considered celestial photography entirely beyond the limitations of their equipments. An important lesson has been taught in thus widening the field of investigation.

* * *

The reference to potash in Solution II of each of the two developing formulas on page 183 of the last issue of The Bulletin, should read potassium carbonate, the same as in corresponding solutions on the following page. This incongruity was discovered after the page was printed and too late for correction.

* * *

Mr. G. H. Emmerich, the editor and artistic director of the *Allgemeine Photographen-Zeitung* in Munich, has been decorated by King William of Wurttemberg with the Ritterkreuz II. class of the Royal Friedrich Order for his untiring efforts in the advance of photography in all its various branches, and particularly as the successful founder and promoter of a photographic institute of instruction in the city of Munich, Bavaria. We tender to Mr. Emmerich our best congratulations for such honorable distinction.

* * *

It is reported that the store of the W. A. Lyon Company, of Toronto, was entered on the morning of June 10th, and goods to the value of $1,000 stolen. The most expensive articles were selected, and the robbery is said to indicate the work of professional thieves. It is to be hoped that they may be apprehended and the goods recovered at an early day.

* * *

The corner-stone of the Illinois College of Photography was laid at Effingham, Ill., on Decoration day last with Masonic ceremonies. The new building is planned to be complete in all its appointments, and is estimated to represent, with the ground upon which it will stand and the present home of the college, an outlay of $75,000.

Those intending to go to Milwaukee from the East, who would like to add a few days of vacation to the trip, and make the journey in the most enjoyable way, will be interested to know that transportation can be arranged by boat from Buffalo to Milwaukee *via* the Erie and Western Transportation Company, Anchor Line. By leaving Buffalo on Monday, July 16th, at 2.30 p. m., reaching Chicago at 6.30 on Saturday, the 21st, and leaving there at 8 p. m. of the same day, they will arrive in Milwaukee at 6 a. m. of Sunday, the 22d. The cost of this round trip, including meals and berth, is $43. One way only, including meals and berth, is $23.50, or return may be made by rail *via* Grand Haven to Detroit, and by steamer to Buffalo, at a cost of $37.50. Full particulars of all-rail routes will be found on another page.

◆

We notice that at the third annual session of the Asheville Summer School and Conservatory at Asheville, N. C., to be opened July 2d to August 25th, a course of instruction in photography is included, which is to be under direction of Mr. C. F. Ray. Portrait and landscape photography will be taken up, and a complete course in the various branches of the work will occupy the students during the session of the school.

◆

MILWAUKEE HOTELS FOR CONVENTION WEEK.

Hotel Pfister—$3 to $5 per day, American plan ; rooms with baths, $4 to $5 per day, same plan ; rooms on the European plan from $1.50 to $3.50 per day, with bath $2.50 to $3.50. This hotel has been chosen the headquarters for the Executive Committee.

Plankinton House—$2.50 per day and upwards, American plan, without bath, and from $3.50 per day and upwards, rooms with bath ; European plan, $1 per day and upwards, without bath, and $2 per day and upwards, rooms with bath.

Republican House—$2 to $3 per day, double, American plan.

St. Charles Hotel—$2 to $2.50 per day, American plan ; with bath, $3 per day.

Kirby House—$2 per day, American plan ; $2.50 per day, with bath, American plan.

Hotel Blatz—Rooms, single, $1 per day and up ; rooms, double, $1.50 per day and up ; rooms, single, with bath, $2 per day and up ; rooms, double, with bath, $3 per day and up, European plan only.

Hotel Davidson—$1.50 per day ; $1 per day where two and three occupy one room, European plan only.

Schlitz Hotel—$1 per day ; 75 cents per day where two occupy the same room, European plan only.

By addressing the undersigned, quoting price of room desired, and stating whether on American or European plan, also what hotel is preferred, room will be engaged, and notice to that effect given.

S. L. Stein,
126 Wisconsin Street,
Milwaukee, Wis.

THE LAST CALL.

I WANT this last call to rouse every photographer in this country. I want every one of you to realize the importance TO YOU of being in evidence at the coming convention. That convention meets in Milwaukee on July 23d, and will, it is already assured, be the most important and the most interesting meeting we have ever held. Now, what are you going to do? We want you to meet and be met by the best and most representative men in our profession; we want you to see their latest and best work, and to let them see yours. We are aiming to broaden the horizon of every one of us by contact with the best wits, the cleverest ideas, and the newest methods that the most up-to-date developments of the photographic art can offer? Are you with us?

I am hoping that you will not only send an exhibit, but be here yourself. We have a splendid building for exhibition purposes, a lovely city, and a firm intention of giving you the best time, both socially and professionally, that you ever had in your life.

Yours fraternally, S. L. Stein,
President Photographers' Association of America.

PROGRAMME TWENTIETH ANNUAL CONVENTION OF THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

Monday, July 23d: 2 p. m. Art Hall open to exhibitors to permit them to drape or readjust their pictures.

Tuesday, 24th: 10 a. m. Opening of the Convention. Address of welcome by Hon. D. S. Rose, Mayor of Milwaukee. Reading communications. President's address. Reports of committees. "Progress of Photography," by W. I. Scandlin. Lecture by Professor O. W. Beck. Subject: "What Are the Principles of Beauty in Art?"

3 p. m. Demonstrations of the MacDonough process in color photography.

8 p. m. Theatre party by special invitation of the Wisconsin State Association. Entire house bought out for the Convention.

Wednesday, 25th: 10 a. m. Reading communications. Treasurer's report for 1899. Secretary's report for 1899. Copyright question of to-day by B. J. Falk. Appointment of committee on nominations. Routine business. Lecture by Professor A. H. Griffiths. Subject: "Topics of Interest and Value to the Photographic Profession Generally." Reports of committees. Informal discussion.

3 p. m. Layton's Art Gallery. Lecture on the art works in the gallery by Professor C. E. Eldridge.

8 p. m. Grand summer night concert at the Deutscher Club by special invitation of the Club.

Thursday, 26th: 10 a. m. Reports of committees. Selection of next place of meeting. Nomination of officers. Election of officers. Lecture by Professor O. W. Beck. Subject: "Does Lighting Insure Art?"

3 p. m. Demonstration of the Ives-Kromskop process in color photography.

7 p. m. Excursion to Whitefish Bay.

Friday, 27th: 10 a. m. Unfinished business. Lecture by Professor A. H. Griffiths. Awarding of prizes. Adjournment.

3 p. m. Grand excursion on Lake Michigan on Crosby line steamer.

ALL ABOARD FOR MILWAUKEE.

A RATE of one and one-third fare certificate plan has been secured for the Convention. Be sure to ask agent for certificate when you buy your ticket. You pay full fare going. The certificate, when signed by the special railroad agent, who comes to the Convention Hall for that purpose, will entitle you to return ticket at one-third fare.

These certificates must be left with the Treasurer when you enter the Exposition Building. A failure to bring certificate or the neglect to leave it with the Treasurer will prevent you from obtaining the reduction on return trip. All certificates must be in the Treasurer's hands on or before Wednesday, the 25th of July.

The following from the office of the Western Passenger Association may be of help in purchasing tickets:

"Under our rules, certificates will be honored which show the purchase of going tickets not earlier than three days prior to the date announced as the opening date of the meeting, and during the first three days thereof, and if presented for return tickets not later than three days after the date announced as the closing date of the meeting (Sunday not to be accounted as a day in any case)."

No city in the country can entertain visitors better than Milwaukee. The Association has never had a President who has worked harder for the success of the meeting than has President Stein.

You may rest assured that your instruction, your entertainment and your comfort have been well provided for. Come to Milwaukee and see the best Convention and the largest attendance the Photographers' Association of America has ever had. A table of railroad rates from different sections of the country is appended.

Geo. B. Sperry,
First Vice-President.

Excursion rates to Milwaukee and return by rail. These rates are based on the certificate plan of one and one-third fare. Do not fail to ask for certificate when purchasing tickets:

Peoria, Ill.	$9 10
Indianapolis, Ind	10 10
Toledo, O.	12 75
Toledo, O., by rail and boat	9 85
St. Paul, Minn.	13 00
St. Louis, Mo.	13 40
Detroit, Mich.	13 75
Detroit, Mich., by rail and boat	9 70
Louisville, Ky.	14 10
Cincinnati, O.	14 10
Des Moines, Ia.	14 80
Pittsburg, Pa.	19 40
Toronto, Can.	20 00
Kansas City, Mo., *via* Chicago	19 50
Buffalo, N. Y.	$21 40
Topeka, Kan., *via* Chicago	22 15
Lincoln, Neb.	22 60
Nashville, Tenn.	26 10
Washington, D. C.	26 75
Little Rock, Ark., *via* Chicago	27 20
Philadelphia, Pa.	27 75
New York, N. Y.	30 10
Boston, Mass.	32 75
Atlanta, Ga.	33 10
New Orleans, La.,	34 10
Dallas, Tex.	39 35
Denver, Colo., *via* Chicago	42 15.

ANOTHER METHOD OF MAKING A STRIP NEGATIVE.

By Rev. F. C. Lambert.

BUT what is a strip negative, and what is it good for when you have got it? asks a reader. In reply, we may explain, that a strip negative is a negative composed of strips of even deposit. Commencing at one end with bare glass and gelatine, *i. e.*, an unexposed and fixed-out part, we next have a very thin developed deposit, next one a little more dense, and so on, up to a deposit so dense that it takes a considerable time for printing light to penetrate. In short, it is a graduated series of steps, from transparent glass and gelatine to opaque developed film. And next, the use of it is as a standard for testing or experimenting. For example, we want a practical comparison of the speed of two plates, *A* and *B*. Our strip negative is put in a printing frame, and plate *A* is put in contact, film to film. An exposure—say of ten seconds—to a gas flame at 10 feet is given. The plate *A* removed and plate *B* takes its place, and this is also exposed for the same time and at the same distance. Plates *A* and *B* are now developed side by side, in the same dish. And comparison of their scale or range of tone, density, color-sensitiveness, etc., will tell the practical man all he wants to know far better than a density curve or speed number alone. In the same way, we can compare the effects of two different developers on two similarly exposed plates of the same brand.

It may perhaps be convenient to remind the reader how these strip negatives are made. The oldest plan was to put a plate in a plate-holder and draw out the slide to the full extent except, say, half an inch. Then, at a fixed distance, give one second exposure to a gas flame. Then push in the slide half an inch, give another second. Push in the slide half an inch, give two seconds. Push in the slide again half an inch, give four seconds, and so on, always exposing at one and the same distance from the light. In Fig. 1 we show the exposure table of a strip negative, made in this way. The top strip is not exposed at all. The second strip has an exposure of one second, and is then covered. The third has one, plus one, total 2 seconds. The fourth has one, plus one, plus two, *i. e.*, total 4 seconds, and so on. The totals are shown at the right-hand side of the figure. It will be seen that each exposed strip gets just double the last, *i. e.*, a geometric series: 1, 2, 4, 8, etc., and that the range, in this instance, is from 1 to 128 seconds. The objections to this method are two: First, it is a somewhat tedious business, when a long series of strips are required; and, secondly, it does not correspond to normal camera conditions. The strip negative is exposed to the same strength of light for different lengths of time. The camera exposed negative is generally exposed for the same length of time to objects of varying light powers. The next method of procedure has one advantage, *i. e.*, it shortens the time of operation. In this case

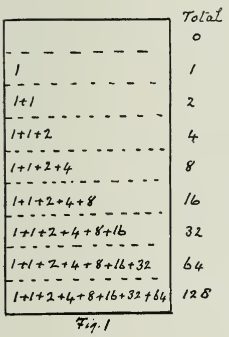


Fig. 1

the exposure is made by revolving sectors. In Fig. 2 such a contrivance is shown, revolving in front of a plate. The outermost sector only has half the circumference of the circle. Consequently, for every turn of the circle the part of the plate *A B*, behind this outermost part, is covered up during half the time the sector takes in making one revolution. The next portion again only uncovers the plate during one-fourth of the total time; the next, one-eighth, and so on. The disadvantages of this system are again two-fold. First, it gives varying times to the same light intensity, and it necessitates a large disc, or the lines of demarcation are inconveniently curved. This will appear from Fig. 2.

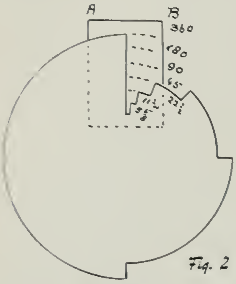
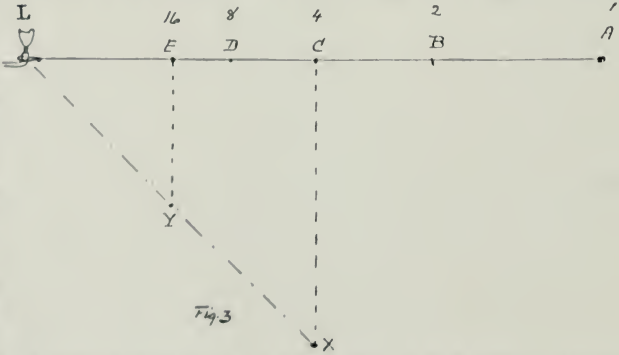


Fig. 2

The third method has the following advantages—we keep straight lines of demarcation, as in Fig. 1, and we can use light of different intensity for the same length of time or vary the time and intensity jointly. Perhaps it will be most convenient for the writer to describe his own procedure, then each one may modify it according to his needs. We first take a stout, firm piece of string such as blind cord. A loop is made at one end, just large enough to easily slip over the gas bracket. We now carry the other end of the string to the opposite end of the room. It is now cut and a knot made at this end.

In Fig. 3, let *L* be the gas flame, and *L A*, the full length of the string, with loop at *L* and a knot at *A*. We now bring *A* up to *L*, and so get *C*, the point, mid way between *L* and *A*. With a packing needle and a bit of fine string we piece the cord at *c*, and passing the fine string two or three times round, make a ring of fine string that can easily be felt in the darkroom.

Now, *L C* being half *L A*, the light at *C* will be *four* times as strong as at *A*. We have now to find a point (*B*), such that the light at *B* is half that at *C* and twice that at *A*. This may easily be done. At the exact corner of a square-edged table we put a pin through the cord at *C*. The two ends, *L* and *A*, are stretched along the two sides of the square table. The string is now as *L C*, and *C X*. We now carefully measure with a second piece of string the distance *L* to *X*. This is our required distance, *L B*. In the same way, *E* is half way between *L* and *C*, and *D* is half way between *L* and *B*. Thus the strength of light at *A B C D E* is as 1 to 2 to 4 to 8 to 16. Thus, to give equal times of exposure to varying strengths of light, for series 1, 2, 4, 8, all



we now need is apiece of card, *A B*, Fig. 4, rather more than twice the length of the plate, and cut out of it a central strip opening, *C D*. We then slide the strip along, as equal times of exposures are given at *A*, at *B*, at *C*, and so on.

There is yet another method, combining the first and third methods which the present writer has found very convenient.

The procedure is as follows: Strip 1 is unexposed. Strip 2 is exposed one second at distance *L A*. Strip 3 is exposed an additional second at *A*. Strip 4 has an additional one second exposure at *B*. Strip 5 an additional second at *C*, and so on. The subjoined table shows the method at a glance, and the total equivalent effects equated to seconds at *A* :

Strip.	Exposures.	Equivalent total at *A*.
1.......	Unexposed..	0
2.......	1″ at *A*..	1
3.......	“ + 1″ at *A*....................................	= 2
4.....	“ “ + 1″ at *B* (*i. e.*, 2″ at *A*)..................	= 4
5.....	“ “ “ + 1″ at *C* (*i. e.*, 4″ at *A*)........	= 8
	Etc., etc.	

It will be found convenient sometimes to cut a fairly large plate, say a 12 x 10, into two parts, 12 x 5. Expose each half in the slide in this way, then cut up each half into a dozen pieces, *i. e.*, 1 x 5, and use them as tests in developing.

In conclusion, I may quote by way of example an experiment just made. Two strip negatives were made by the method last mentioned. Both plates had identical exposure, but one was developed in a normal ortol mixture, and development carried on until one could just distinctly see an even, very pale deposit on the strip which had least exposure. The second was developed to the same visual test, but with hydrochinone. These two negatives were tested with strips of *P. O. P.*, and fixed without any toning. The first pair of paper strips were both printed just as long as one could see a difference between the part under clear glass and the strip of least exposure. This was a test for shadow detail. The results are shown in the strips *O* 1 (*i. e.*, ortol negative) and *Q* 1 (hydrochinone negative). Below the strips we letter the steps, and give the equivalent total time. Step *A*, no exposure; step B, one second; step *C*, two seconds; step *D*, four seconds, and so on. On comparing *O* 1 and *Q* 1, it must be remembered that the fixed paper shows a slight loss of printed strength. Hence, in both strips *A* and *B* show more difference than they did when they left the printing frame. Next we notice that in both we can just see step *G* (thirty-two seconds), while step *F* (sixteen seconds) is about equal in both. But step *A* in the ortol negative is darker than the same step in the hydrochinone

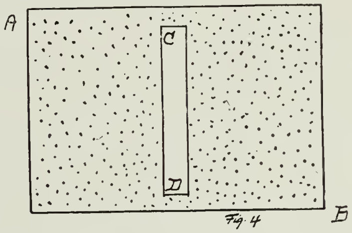
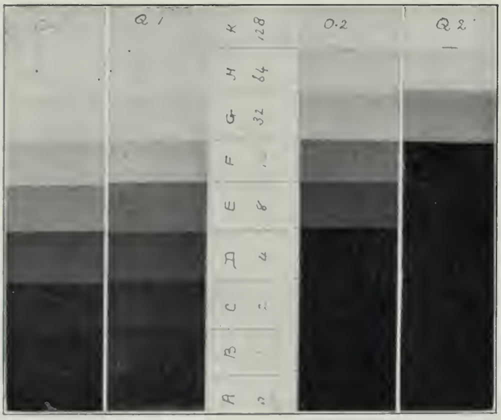


Fig. 4

negative. In other words, then, the ortol gives us a less steep, more graduated, or longer scale negative in the shadows.

A second pair of paper strips were printed, *O* 2 and *Q* 2. First, *Q* 2 was printed until one could just see a difference between steps *H* and *K*, *i. e.*, until the maximum detail in the high lights could be got out. Then *O* 2 was printed until step *H* was equal to the same step in *Q* 2. But by this time step *K* was also just slightly tinted in *O* 2. We may now regard the two strips as equal so far as printing of the high lights is concerned. But what about the shadows? On comparing step *G* we find *Q* 2 markedly darker than *O* 2, and step *F* in *Q* 2 is still more darkened than the same step in *O* 2, while from *E* down to clear glass in *Q* 2 is practically even blackness. But in *O* 2 we can see differences clearly down to *B*, if not to *A*. The practical mean, then, is that the ortol negative gives a more steadily graduated range at both ends of the scale than does the hydrochinone negative, while the hydrochinone negative gives a much steeper curve, or more contrasty, vigorous negative. Now, the reader must not hastily conclude that ortol is best for any and every purpose. In negative-making we must always bear in mind that we are making a tool, a means to an end, and that a negative which gives the better print with P. O. P. will not necessarily give the better print with carbon or albumen or platinum or iron. The character of the negative must not only be adjusted to the special character of the printing process, but also must be borne in mind the character of the result required.



Finally, the worker who hitherto has only worked with landscape or portrait or other subject negatives, may not just at first feel at home with a strip negative. But a little thought will very soon show him that a strip negative not only tells him as much, but a great deal more than, any subject-negative can, and that the steps are side by side for comparison, not scattered about as in a subject negative.

UNCONVENTIONAL PHOTOGRAPHY PICTORIALLY CONSIDERED.

By H. McBean Johnstone.

IN almost everything we do, so complex are our inter-relationships, we are bound to pay more or less attention to our neighbor's footing on the matter. Art is an exception. It is one of the few occupations in which it is possible for any one to do exactly as he pleases without consulting others ; and indeed, unless the artist does this, he is not honest with himself, that is, he does not express his own likes and dislikes with as much sincerity as though there were no other people in existence. There is, after all, but one test for art, and that is sincerity ; for unless pictures are begotten of sincere admiration and produced with a sincerity of purpose, we cannot admire them, even though we may be able to respect their technical excellence. Or in looking over a collection of photographs, though our admiration may be all for the prettiest, our respect must, after all, be for those which show the most earnest study and work on the part of the operator, even though he may not possess that artistic temperament that is necessary to make him an artist.

One artist says that in sincerity in photography, the first essential is that the work should be a photograph, a literal transcript of Nature He sees no objection to hand-work within reasonable limits, if it will help to produce some particular effect that is aimed at, for it is possible, by knowledge and various methods of treatment, to get a truer and more pleasing picture than could otherwise be obtained—in fact anything save fudging, is permissible. By using the expression "literal transcript" in regard to a picture, it is not wished to narrow the bounds of photography, though there are bounds, and very firm ones, too. The light rays, under our judgment and good taste, produce the picture, and, with our limited means of modification, we endeavor to bring this piece of Nature's handiwork into agreement with our view and idea of the scene. Therefore, by literal, it is meant that the picture is to be the effect under which the negative was made, and not merely an effect, however pleasing, for the simple reason that it is not possible to start with a free hand. "Stand out in the fields with a fistful of brushes, and you may paint your dreams, if you can; but when you put your head under that black cloth, stick to facts, because you must."

Here it has been stated that any kind of dodging is permissible except fudging, which word is probably used to refer to the suppression of detail and an aim at the producing of a general, rather than a particular effect. But there is more than one way of looking at this subject. Not a few people are apt to imitate any procedure without due, or even any regard for the reason of its being adopted, and probably it is from a study of photographs made by such people, from which the ideas in the preceding paragraph have been gathered. For example, they see a successful photographic picture, and note that by some means or other the detail has been largely suppressed, and then jump to the conclusion, that it is by this means that the success of the photograph has been attained. Hence they imagine it is a panacea for all defects, and forthwith proceed to use this means indiscriminately—as a fetish, a patent cure-all plaster. There can be only one occasion where this fuzzy type method is permissible, and that is when the obliteration of detail and outline is accompanied by some equivalent gain. In other words, this procedure should be adopted with some definite object in view, *i. e.*, precise purpose to be attained, and not merely for the sake of following a fashion or example, or to cover a defect or hide bad workmanship.

To those who demand the truth, the whole truth, and nothing but the truth, may be quoted Hamerton's words: "All slavish Chinese imitation of separate bits is death and destruction to the whole picture"; or we may quote Hunt, who says: "Put in only such details as will help the masses"; or again, "Elaboration is not beauty" or, yet again: "In poetry and paintings facts do not amount to much." A vivid impression of sunset is not conveyed by stormy clouds in angry red carbon, nor a snow scene in crude blue. The impression, which most "impresses" is that conveyed by suggestion rather than by imitation.

At a period when few thought of or cared for anything but the unvarying sharpness of *F*/64, the delightfully simple formula that sharpness throughout would not do for pictures, was, if not philosophical, at least a very natural product of the time. Indeed, it is still held by most workers, that, for artistic landscape work, lens definition, at its sharpest, is too sharp and commonplace in its tendency. No doubt there are numerous compositions—for instance, where the decorative appeal is most prominent—where the artist finds perfect definition desirable, but the subject in natural work, which best fits the miniature style, is not likely to be anything more than of the pretty order. At least experience seems to teach us that the manner does not lend itself to bringing out the spirit of a grand prospect, the general sentiment, the large quantities of light and movement, and, in sum total, those characteristics, which are most closely associated with what we recognize as the poetical aspect or feeling.

In answer to the expressed opinion, that pictures of this diffused type cannot be art, because the unaided eye cannot receive the same impression, let it be stated that the sense of beauty governing the making and criticism of pictures is not dependent upon an unaided eye, for it is from the sum total of much experience and comparisons of impressions that we form our ideas of any particular spot or place. The analyzing critic must consider, not only the physiological conditions and actions of the eye as an instrument by itself, but also the many complex motives and mental impressions the artist desires to fix and convey.

Our pictures are mere illusions on the flat, and it is impossible to represent in them the conditions of definition and perspective, which hold when we view the actual scene itself. When we move our eye

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from one part to another over the landscape, we have a new point of sight for every spot upon which our vision rests, and an entirely different perspective each time.

What we have to do is to use definition as an aid in the expression of our impressions, and to do this it must vary according to the aim. Definition is a matter of relative interests, and in it, as well as in every other branch of the photographic method, technical perfection depends upon the motive. A process has no natural perfection ; its perfection is all relative, and a technically good photograph in respect of focus is one in which the definition is well suited to the purpose, no matter whether sharp or diffused. The principle that we have to establish is, that as no one treatment is able to meet all the needs, the craftsman is at perfect liberty to use whichever he pleases, or, if it suits his purpose, all of them. One picture needs the beauty of individual details; another, general effect; yet another, a technique that expresses the rapid movement of the eye over the landscape, or that immediate impression of beauty either of the light of an extensive view or the concentrated interest of a beautiful figure or group in a subordinated surrounding. It is our feeling at the time of taking the picture, and the impression that our mind carries away from the scene that must decide what method we are to employ in reproducing it.

There are sharpists and sharpists ; there is the class who know why they want perfect definition throughout, and who aim at this result and get it effectively. These are not the ones who are unable to see the good qualities of general diffusion when properly applied. But, on the other hand, there are those who would appear to be deficient in understanding and knowledge of artistic effect and practice, who remain bound to some traditions of the past, and who have their sense of beauty cramped by the most unemotional experiences and unimaginative influences. They have, of course, a right to their opinions, and in an art discussion each man usually claims his taste is as good as that of any one else, but, by the only criterion that exists, they cannot expect much regard or deference until they show some knowledge of good tone rendering, decorative composition, and general appreciation of artistic motive ; so that while we are perfectly willing to allow our photographic chemists the right to their own opinions on matters connected with the pictorial side of photography, we feel compelled to promptly discount the importance of their announcements.

This, of course, may be generally applied to the criticism of pictures, but it suggests itself at the moment with regard to the subject of definition and diffusion. All kinds of definition may be argued to be natural, according to the image formed in the mind of each observer. That sharp definition has delights, and may be part of an artistic whole ; that differentiation is a valuable power for emphasis and relief, and that diffusion has proved its claim to soften out obtrusive details and give general effect feelingly, with a sufficiency of fact and without loss of relief, is all undoubtedly true.

Some time ago, in an article in photography, Mr. Sutcliffe said that he once knew a clever landscape painter whose method was peculiar, inasmuch as all day he would be working at anything but painting, but as night approached he would go out into the fields and lanes hunting for subjects. We once asked him why he always looked for fresh ideas in the twilight; his reply was that that was the only way he could tell what was worth painting, and he pointed out how in the uncertain light of the evening only the most important features of the landscape were visible, and that breadth, the most lasting charm of any work, could be easily retained by a continuous study of Nature when dimly lit. Surely the ends of art photography would be better served if, instead of devoting so much attention to the detail, that the lens and plate are only too willing to pick up, modern photographers would study breadth, and the whole effect of a picture.

But perhaps there is no one beauty that will please every one. Hunt says: "Beauty is something which fills the whole world, and is neither contained in a straight nose, a long eyelash, or a blue mountain. Some see it in a leg of mutton, others in a compound fracture; and to expect others to accept one's own definition of it is as absurd as to expect all humanity to use the same toilet brush."

TONING WITH FERROCYANIDES.

By L. P. Clerc.

METHODS of toning with uranium salts have long been known. Selle, having recommended its application, in 1866, for the purpose of intensification, numerous formulas have been published for coloring diapositives by its agency, and many preparations of it have been placed upon the market.

If a picture of metallic silver is immersed in the solution of a ferricyanide, the silver will reduce the latter to ferrocyanide salt. If now the ferrocyanide, which formed alongside of the silver salts, is insoluble, the original picture has changed to either a denser one (uranium, molybdenum), or a weaker one (iron, copper). But as most of the ferrocyanides have a bright color, the most variegated tones can be produced by their use. The number is almost unlimited, from the fact, that the ferrocyanide salts of the pictures can be changed, in most cases, by still other salts of the applied metal. Finally, the change into ferrocyanide may serve, not only for intensification and toning, but also for the reduction of too strong silver pictures. In the well-known reduction process the picture, changed into ferrocyanide of silver, is dissolved by hyposulphite of soda.

For the execution of the operations, it may be remarked, that the ferricyanide, which is not readily found in the market, may easily be produced from red prussiate of potassium and any salt of the metal in question. As, however, the acid of the metallic salt will act upon the silver, chloride is not applicable. The ferricyanide solution must not contain any ferrocyanide salt. The ferricyanide of potassium solution should, therefore, be produced from well-washed crystals, immediately before use. Further, a weak light should be used for working, on account of the light sensitiveness of the ferricyanides of most heavy metals, and, finally, all foreign bodies, having a reducing action, should be carefully removed from the silver picture by washing or oxidation with a 1 per cent. solution of persulphate. It should also be considered, that different metals will give several ferrocyanide compounds, under pretty nearly the same conditions; it is, therefore, important, in order to obtain a particular tone, that the following directions are observed:

1. *Toning with the Ferrocyanides of Uranium.*—Two uranyl-potassium-ferrocyanides are known. One (I), is deep red and dissolves fairly well in water, but it gradually precipitates in the solution, in which, by the addition of small quantities of diluted uranium solution, it forms a concentrated solution in ferrocyanide of potassium, or, without this addition, it remains undissolved, when it forms within the gelatine film of the plate. The other (II), is brown-red, insoluble in water, and forms uranyl salt, in presence of excess of uranium.

Both ferrocyanides dissolve easily in carbonate salts, as they are found in sufficient quantity (as acid carbonate of calcium), in the ordinary running water. To destroy the action of the latter during washing, an addition of a little acetic acid is sufficient.

If, now, a silver picture is changed to a ferrocyanide picture by immersing it in uranyl-ferricyanide solution, it will consist of a mixture of uranyl and silver ferrocyanide. This latter substance is white and transparent. To produce harder pictures, it is, therefore, frequently of advantage, to dissolve them again. Hyposulphite salts and ammonia would attack the uranyl compound; ammonium sulphocyanide, on the contrary, leaves them intact, and dissolves only the silver compound. This operation may take place simultaneously with the toning by adding the ammonium sulphocyanide to the toning bath; it is, however, better to do it afterwards in a separate bath.

By the different colors of both uranyl compounds, it is in our power to vary the tone of the pictures by promoting the formation of the deep red by abundant ferricyanide of potassium in the solution; or the brown-red, by excess of uranium salt. From the formulas of both uranyl salts the necessary quantities of the solutions of ferricyanide of potassium and uranyl salt for the preparation of the toning baths can be calculated, namely: For deep red pictures, 50 cubic centimeters ferricyanide of potassium, and at most 60 cubic centimeters uranyl acetate, and for brown-red pictures, 50 cubic centimeters ferricyanide of potassium, and at least 75 cubic centimeters uranyl acetate, supposing, of course, that the concentration of both solutions is of equal percentage.

For practical purposes, in the first case less uranyl salt, in the second case more, will be taken to obtain a pure tone. Valenta prescribes, for the red tone, 50 cubic centimeters ferricyanide of potassium and 30 cubic centimeters uranyl nitrate, and for sepia tone, which forms by mixture of unchanged silver with the compound II, 50 cubic centimeters ferricyanide of potassium and 60 cubic centimeters uranyl nitrate, whereby the large excess of the uranyl salt is to act as a retarder, in the latter case. The concentration of the solution is not of great importance, a 10 per cent. solution having practically the same action as one of 1 per cent., but the latter is to be preferred, because the change proceeds much more slowly and can be followed better. The toning tans the gelatine considerably, but this circumstance causes no difficulty in washing, which, as already mentioned, should take place in water, acidified with a little acetic acid.

2. *Toning with Iron Ferrocyanide* (*Prussian Blue*).—As with uranium, iron has also two ferrocyanide compounds, which are known as prussian blue, and a potassium double salt. The former originates in most cases by mixing ferrocyanide of potassium and ferric salt solutions; is insoluble in water and cold diluted acids, and is only sensitive towards alkalies, which change it into hydroxide of iron. The second originates under certain conditions by dropping the iron salt solution into that of ferrocyanide of potassium. It is easily soluble in water, and is therefore not to be considered for toning purposes—a small loss, as its color does not differ from that of prussian blue.

As only one compound is under consideration, the exact quantity of the mixing proportions of the substances to be applied is not very essential. Care must only be had about the selection of a suitable iron salt. The chloride is excluded, as it attacks the silver. The nitrate and sulphate give also very uncertain results. Organic salts (acetate, citrate) proved to be not suitable in consequence of the hydrolyse, but in an acid ammonio-citrate of iron suitable material was found.

As mixing proportions there were taken: 50 cubic centimeters ferricyanide of potassium and 60 cubic centimeters iron salt. A small excess of the latter worked to advantage. The exclusion of light is very important with this toning. The tone passes through blue-green (in consequence of unchanged silver) into blue, whose purity is more predominating if the simultaneously formed ferrocyanide of silver is dissolved with hyposulphite, but after toning, and after thorough washing. The washing out can be done with ordinary water, as the blue compound is not sensitive to carbonate salts. The result of this toning is a reduction. The black silver picture is replaced by the more transparent blue picture.

3. *Toning with Molybdenum Ferrocyanide.*—From the ordinary ammonia molybdate a molybdic solution is obtained with acetic acid, which, with ferrocyanide of potassium, also gives two ferrocyanides, of which only one is insoluble and comes into consideration here. Its color is nut brown, and its production in the picture to be toned exactly the same as that of the iron compound by application of 50 cubic centimeters ferricyanide of potassium and 60 cubic centimeters molybdic solution. The tone which originates is olive brown, and the process has the advantage in comparison with the uranium toning that it is much easier to obtain pure whites in the picture.

4. *Colorless Ferrocyanides.*—The black silver picture changes into colorless ferrocyanides when bathed in a solution of ferricyanide of potassium and the salts of earth and alkali earths, of antimony, tin, mercury, lead, etc., while chromium, nickel and manganese furnish no insoluble ferrocyanide. All these compounds form only with difficulty in the gelatine, under suitable conditions. They are only of interest, in so far as they are convertible into colored compounds, the antimony compound into the orange-yellow, and very transparent sulphide, and the lead compound into the yellow constant chromate.

5. *Toning with Copper Ferrocyanide.*—It was not easy to discover a solution which contains copper salts and ferricyanide of potassium without separation of copper ferricyanide, and which on the other hand did not dissolve the ferrocyanide of copper and silver, which form during toning. Finally, a suitable liquid was found by mixing acetate of copper with oxalic acid, and so much oxalate of potassium that the precipitate of oxalate of copper which first formed dissolved again, so that now ferricyanide of potassium was added to the solution. The applegreen liquid which results changes the silver picture into one of ferrocyanide of silver and copper of very considerable transparency, so that the process is only applicable for the reduction of extremely dense silver pictures. But in this case it appears to be of hardly any use, as the picture so produced is very inconstant, in opposition to the uranium, iron and molybdenum preparations, which resisted even the bad atmosphere of an analytical laboratory.

Simultaneous Tonings.—A picture toned with uranium can subsequently be changed into the blue iron picture by a bath of any iron salt. It was tried to produce complementary tones by simultaneous application of two ferricyanides. Uranium and iron gave a greenish tone, molybdenum and iron greenish brown, copper and iron violet shades, but they were as inconstant as the pure copper toning.

Ferrocyanide Toning in Separate Baths.—The toning with ferricyanide, for instance, with ferricyanide of iron, can, of course, be done in such a way that the pictures are bathed successively in ferricyanide of potassium and iron salt solutions. But the application of mixed baths is easier, and the separated ones offer only an advantage if a soluble ferricyanide of the metal in question cannot be produced, as, for instance, cobalt and nickel.

Translated by
HENRY DIETRICH.

* * *

ON THE STUDIO ROOF.

WRITING on this topic, Mr. F. M. Sutcliffe, in the *Amateur Photographer*, says, in part:

"It is possible by looking at a photographic portrait to learn what kind of a light fell on the sitter when the portrait was taken. It is even possible, by looking at a quantity of portraits by one photographer, to learn the shape and size of his glass-house or studio.

"On taking up, say, a score of portraits by different men, it will be found that there is much difference between them. Some appear round, others flat; some have much shadow, others have little or none.

"A few years ago photographers aimed at making portraits which were round, but yet soft, and, when they had so built or modified the light in their studios that this effect was secured, they let well alone, and kept the sitter's chair in one place and the camera in another. When sitters were plentiful this way of working was found to pay; if the light did not suit every sitter it suited most of them. Now that sitters are more exacting, the light has to be modified to suit each individual one, or the photographer gets no orders.

"Everyone knows that their relations and friends look better at certain times than at others; very often the reason is that they are seen in a light which emphasizes certain features. It should be the aim of the photographer to so light his sitters that they look their best.

"It is often said that the size of the studio and the shape of the studio light is immaterial, and that the way the portrait is lighted depends on the workman and not on the window. Broadly speaking, this is so; but what can be done with ease in one studio may tax the skill even of a past master in the art of lighting in another—so very much depends on the size and shape of the skylight.

"When a photographer decides on building a studio, his choice of skylight—by this term I mean the window, whether top side, or the two combined—is governed by many things. Does he intend to confine himself to bust portraits of single figures only? Then a very small window will do. Does he intend to take groups? Then his room and his light must be large enough for the largest group he expects to have. Does he intend to take babies? Then his light must be bright.

"It may be taken for granted that the ideal studio has yet to be built. Let the photographer calculate ever so nicely, he will be sure to overlook something which will be found to affect his work. For instance, if one studio is built on the ground floor, and another on the first or at a higher elevation, of exactly the same form, the light will not be the same in both. Or, if two studios are built exactly alike, the one glazed with plain glass and the other with obscured, the light in them will be quite different.

"Some of the best portrait work I have seen was taken by Mr. Pringle in an engine-house which had been turned into a studio. Much of the charm of the lighting of these portraits was owing to the fact that the studio was built on the ground floor, in a garden free from objects which might throw reflections; even when the sun shone on the grass, which stretched out away from the skylight, its reflection did not spoil the light on the sitter's face. As far as I remember, the room had a flat top light in front of the sitter, which light was almost entirely screened off with white calico; the side light was also subdued with similar curtains, except at one place, which admitted direct light. This direct light was about 1 foot wide. I have been in studios similarly lit, but not on the ground floor, and all the portraits taken in them are flat compared with Mr. Pringle's work. It may be that the photographers had got into the way of over-exposing in all these other studios, for I believe that operators, like printers, require continually pulling up. Some have sense to do so without being told. It is remarkable that if a printer has a hundred prints to make of one negative he will make them darker and darker as he goes on.

"I said just now that the ease of lighting a portrait depends very much on the size of the studio and its skylight. I had this fact strongly impressed on me many years ago, when the question of lighting puzzled me greatly. In those days I found it easy to get brilliancy—one side of a black coat used to come out nearly white, and the other quite black—but I could not get a black coat to look black on both sides. One day I had the opportunity of seeing inside the studio of one of the principle photographers in Liverpool. The faces in his work struck me as being, if anything, too flat; but the two sides of his sitter's coats were both black. Once inside the studio it was evident what had caused my trouble and what made the work done in this studio so flat—the light was ten times as far from the sitter as it was in mine, and the studio would have held forty such studios as mine. I have never seen such an immense skylight since. With the light at such a distance the rays of light must have got so weakened that they would have been powerless but for their quantity—this caused the flatness. Since then I have built other studios, and that hardest taskmaster of all—experience—has taught that the lower the studio and the nearer the sitter is to the source of light the easier the light is to manage. When the sitter is near the light in a small studio an ordinary cabinet mount placed on the skylight above him will affect the light on the face; but it would not have any appreciable effect if placed on the roof of a high studio. With a small studio, and a low light, some way of avoiding excessive brilliancy must be adopted, unless violent effects of lighting are wished for. There are three ways of providing against excess of brilliancy: the inside of the room may be made light in color, or Mr. Pringle's method adopted, or the light may be subdued; not that these three methods will give similar results, they will be quite different. Not only will they affect the lighting only, but they will affect the sitter himself. In fact, it is my firm impression that this last question is of more importance than all lighting, and is the question which is all but ignored by photographers, for it is the 'feelings' and not the 'features' of the sitter which are of the greatest importance in a portrait. A perfectly lit portrait of a sitter evidently ill at ease is of no use to any one, whereas a portrait showing the soul of the sitter, no matter how bad or how incorrectly exposed or developed, will be treasured. So, whatever means are employed to manage the light, they must not affect the sitter's feelings, as the head-rest and painted backgrounds used to.

"When the light is subdued, local color tells strongly; that is, a gray dress comes out gray, a white dress white and a black one black; but when the light is direct, photography can be employed to make black white in a truly legal manner. Unfortunately, the photographer's patrons give him as little encouragement to use the light as powerfully as he would like to; they complain that their hair is too light or the braid on their skirts too dark. Sometimes ladies with mouse-colored hair wish their hair to be made light. Then the wily photographer will turn on his strong light and make it appear golden and shiny.

"Of all lights, reflected light is the one which beginners manage the worst. Often the reflected light turns a good picture into a poor one, and makes a pair of straight eyes appear to squint. It is never really necessary to use reflected light. If the shadows appear too heavy, that is the fault of the skylight, not the want of reflected light. Reflected light should be reserved for special effects, such as lighting a portrait entirely with reflected light. The dresses of sitters in white reflect a lot of light. This makes it sometimes difficult to get groups well lit, for the dress of one sitter often throws too much light into the face of another. Even with single figures, the light reflected from a light dress is enough to interfere with the roundness of the face. This is particularly noticeable when the face is naturally a round one; too much reflection from a white dress makes it appear flat, and unless the direct light falling on the white drapery is lessened in quantity, there will be no order from the proof of that negative."

A NEW PRINTING PAPER.*

E. VALENTA has tried to introduce silver phosphate in place of silver chloride in the emulsion printing process, and his experiments were directed upon collodion emulsions.

To produce such a silver phosphate emulsion 1,500 cubic centimeters of 4 per cent. collodion were mixed in a bottle with 250 to 300 cubic centimeters of ether, and to this solution were added from 20 to 25 grams phosphoric acid solution, after which 50 to 60 grams of citric acid, dissolved in 100 cubic centimeters of absolute alcohol are added ; 70 to 75 grams nitrate of silver are then dissolved in 75 to 80 cubic centimeters of water, and to this solution was added 150 cubic centimeters of alcohol. The so-obtained silver solution is added to the collodion in yellow light in the darkroom in small parts under good shaking. The phosphoric acid, by coming in contact with the nitrate of silver, forms a yellow emulsion, which contains citrate of silver besides phosphate of silver. To destroy the action of the nitric acid, which has been liberated by the foregoing process, 4 to 8 grams of finest powdered carbonate of lithium are added to the emulsion, and shaken until no more carbonic acid develops. 20 cubic centimeters are then added, of a solution consisting of equal parts of glycerine and alcohol, and the emulsion is then filtered through cotton. The flowing or coating of the paper is done in the same way as with the ordinary chloride of silver collodion emulsion. The sensitiveness of the silver phosphate papers surpasses that of the best collodion papers. The negatives must be of good density for this process, and should be rich in contrast. The printing must be pretty strong. The color of the print is dark-brown black. The following toning bath is recommended for these pictures :

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* From *Photographische Correspondenz.*

Borax	10 grams.
Chloride of gold solution (1 : 100)	50 cubic centimeters.
Water	1,000 "

After washing the prints several times in soft water, they are put in this toning bath, in which they assume brown to purple-brown tones. The following ammonium sulphocyanide gives prints of a more bluish shade :

Ammonium sulphocyanide	10 grams.
Fixing soda	1.5 "
Water	500 cubic centimeters.

For use, 100 cubic centimeters of this solution are mixed with 100 cubic centimeters of water and 20 cubic centimeters chloride of gold solution.

After the toning is completed, the pictures are fixed in a 10 per cent. fixing soda solution.

Translated by
HENRY DIETRICH.

A MODIFICATION OF THE METOL DEVELOPER.

By H. Quatz.

MANY of my photographic friends have expressed the wish to possess an energetic developer which admits great latitude in the time of exposure—in short, a developer equally suitable for instantaneous and time work. Regarding energy, the metol developer would be the first under consideration. A negative developed with metol appears almost instantaneously, and although it looks thin and gray in its first stages, it gains in strength. With over-exposures the matter is more difficult, and an absolute clearness of the depths, even with a moderate quantity of alkali, cannot be obtained, the addition of bromide of potassium not making it possible, and by a combination with hydrochinon the development takes considerably more time. After several experiments I found in hyposulphite of soda a suitable medium to keep the negative clear without influencing the rapidity of development. It is a peculiar fact that the addition of fixing soda to the metol developer has a retarding and clearing action, while the same substance exerts an opposite action with, for instance, the oxalate of iron developer.

The formula, as modified by me, is as follows :

Solution 1.

Metol	5 grams.
Hydrochinon	1 gram,
Bromide of potassium solution (1 : 10)	60 drops.
Hyposulphite of soda solution (1 : 10)	60 "
Water	500 cubic centimeters.

SOLUTION 2.

Carbonate of potassium	20 grams.
Water	250 cubic centimeters.

For instantaneous views, 3 parts of Solution 1 and 1 part of Solution 2 are mixed; for time exposures, or even over-exposures, the development commences with a small quantity of alkali, about 10 parts of Solution 1 and 1 part of Solution 2, and the developer is then made stronger, according to requirement. With instantaneous views the picture appears at once, and the development is finished in two to three minutes. Several plates can be developed in succession in the same developer, without loss of its reducing capacity. Another very agreeable part of this developer consists in its manifold application. In accordance with its composition it is suitable for velox and bromide of silver gelatine paper as well as diapositive plates. For developing velox paper a mixture of 3 parts of Solution 1 and 1 part of Solution 2 is applied. For bromide of silver prints a mixture of 3 parts of Solution 1 and 1 part of Solution 2, and this is diluted with five times the quantity of water. Diapositives require a combination of 6 parts of Solution 1 and 1 part of Solution 2, with addition of an equal volume of water. It is noticeable that with correspondingly shorter time of exposure and more concentrated developer, the blacker became the tone of the diapositives, while, by increasing the dilution with water, a warm brown shade appeared.

Translated by
HENRY DIETRICH.

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HINTS ON MOUNTING AND FRAMING PHOTOGRAPHS*.

THE disagreeable appearance of a somewhat yellow silver print can be greatly improved by mounting the same on crème-colored cardboard, which reflects the yellow of the whites in the picture. All papers, which are not strictly white, should be mounted on crème-colored board. Gray will always show the defect. Considering the shade of the yellow or other cardboard, there should be perfect harmony between it and the tones of the picture. Black pictures, of course, do not come into consideration here. But the picture, intended to be black, is frequently brown-black. If mounted on a gray or white cardboard, the brown will predominate; while on crème-colored board, the effect will be black. A too deeply developed bromide of silver print or enlargement mounted upon a deep gray or other dark, or even upon a black, cardboard, however, may, in many cases be used, while the underexposed or underdeveloped print looks well upon white cardboard, if only the whites are kept clear. In framing the same judgment must be exercised. The effect of the cardboard may be destroyed by the frame. There are large pictures which look best without any

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*From *Liesegang's Journal.*

margin or visible cardboard. Such frames may be broader than would otherwise be used. Other pictures again look better framed in passe-partout. Glossy prints should have dark moulding, while mat papers require a moulding of light color. A light moulding and suitable board have a very harmonious effect. The moulding should always be narrower than the margin. The principal purpose in framing should always be considered; that is, to separate the picture from its surrounding, to give the representation a stage, so to speak, from which it may assert itself unrestricted by its surroundings. The preference for gold or bronze frames is not on account of their color, but is owing to their separating action.

Translated by
HENRY DIETRICH.

GLEANINGS FROM GERMANY.

By HENRY DIETRICH.

BRILLIANT *blue prints* can be obtained from their negatives by putting the print in water to which has been added about 5 per cent. of alcohol. To obtain handsome shadows of a deep blue the print is taken from the alcohol bath, and, without previous washing, is put into a solution of

Bichromate of potassium	9 grams.
Water	100 cubic centimeters.

After a few minutes it is washed in a solution of glacial acetic acid 1:50 and dried. The alcohol bath can be used at least thirty times in succession, and the bichromatic bath still more.

Mixtol Developer—

Boiling water	100 cubic centimeters.
Sulphite of soda	8 grams.
Hydrochinon	0.7 gram.
Eikonogen	0.5 "
Yellow prussiate of potassium	0.1 "
Carbonate of potassium	5 grams.
Caustic potash	1 gram.
Bromide of potassium	0.1 "

The ingredients are added in above order, but only after each previous one has dissolved. A strong yellow, clear liquid is obtained, which develops very energetically. For use it is diluted with one-half of water.

Overprinted paper pictures can be utilized by toning and fixing them in the ordinary way, and then reducing them in a very strong solution of fixing soda. The tone will become gray to gray-black. The stronger the solution, the quicker the reduction and less cold tones. These gray tones are very applicable for a good many purposes, and the pictures can be subjected to this after-treatment at any time.

Professor Dr. Miethe has been appointed a member to the international jury of the Paris Exhibition for "Photo-Chemical Industry and Photography."

Pyrocatechin Sodaphosphate Developer.—Dr. E. Vogel recommends for time exposures and for instantaneous views a developer of the following composition:

A.—Pyrocatechin	5	grams.
Sulphite of soda	25	"
Water	250	"
B.—Ordinary phosphate of soda	47	"
Caustic soda	5	"
Water	250	"

For use take 1 part *A* with 1 part *B*, and add 1 part of water.

Ammonium persulphate to remove pyro spots. Liesegang has found that the new reducing agent ammonium persulphate is an excellent medium for the removal of spots from pyro solutions. To remove them from the hands, moisten a little of the persulphate and rub the spots with it; after which, wash thoroughly. To remove the yellow color from the negatives, put them, when still wet, in a 10 per cent. solution of ammonium persulphate and wash, as soon as the color has disappeared. If left too long in the solution, reduction will, of course, take place.

Electric Monochromatic Light.—Two members of the Academy of Science in Paris, Ch. Fabry and A. Perot, have discovered a new light, which is almost monochromatic and is extremely powerful. The light belongs to the class of electric arc lights. The poles, however, do not consist of carbon, but of mercurial silver surfaces in the vacuum. This metal is in two concentric glass tubes, and the surfaces are separated only by the inner glass wall. To produce the light a current of 30 volts and 3 amperes is necessary. To form the light arc it is only necessary to put the arrangement into motion, whereby a temporary contact is obtained. The light is not quite pure, but it can be improved by employing compensating light filters.

AMMONIUM PERSULPHATE IN INTENSIFICATION.

By Chapman Jones, F. I. C., F. C. S., in "Photography."

When a solution of ammonium persulphate is added to a solution of silver, such as silver nitrate, under certain conditions, a black precipitate is slowly produced. It has been sought to explain the peculiar character of the reducing effect of the persulphates on photographic images by means of this reaction, supposing, that is, that while the reducing or dissolving action is taking place within the film, an intensifying or depositing action takes place at its surface, and so the detail near the surface of the film is not lost. This explanation of the action of the persulphate is, however, open to grave doubt, if not to absolute disproof.

It does not appear that this imaginary method of intensification has ever been applied as a method of simple intensification (that is, unaccompanied by reduction or solution of the image), but it has been suggested to employ a solution of silver in ammonium persulphate, mixed with pyrogallol or other similar reagent, such as metol, for this purpose. The question is, is there anything new in this suggestion, and if so what is it that is new, and what is the best method of applying the new knowledge?

When metallic silver is dissolved in ammonium persulphate, the products are silver sulphate and ammonium sulphate. But some of the persulphate will be decomposed into ammonium sulphate and sulphuric acid. We have, therefore, to deal with silver sulphate, sulphuric acid and ammonium sulphate. There is no persulphate remaining, for if there is an excess of it at first it would disappear in a day or two, and we have been told that these silver solutions keep indefinitely. Now, silver sulphate is only sparingly soluble in water, differing very greatly indeed in this from silver nitrate. The solution is by force of circumstances, therefore, dilute, and may be described in plain language as a dilute, acidulated, silver solution. Now the fact that a dilute, acidulated, silver solution when mixed with pyrogallol will deposit metallic silver slowly, and so form an effective intensifier, has been known and taken advantage of since almost as long ago as the introduction of the collodion process. When gelatine was first used, this method of intensification was naturally tried, but it failed to be practically useful because it stained the gelatine. Mr. McIntosh (see page 757 of last year's volume of *Photography*) finds that the method which utilizes the persulphate stains gelatine badly, and proposes to substitute metol for the pyrogallol. Even this reagent is not without its drawbacks; either constitutes a roundabout and uncertain way of preparing the silver solution. Obviously the persulphate is unnecessary. Presumably there is no charm in silver sulphate, except that it cannot form other than a dilute solution.

For those who appreciate such methods of intensification, I would suggest a dilute solution of silver nitrate, acidulated with sulphuric acid, and to add the metol, pyrogallol, or other similar substance to it as usual, immediately before use. If the ammonium sulphate is found to have any advantage, though the probability is otherwise, it can easily be added in definite quantity. The exact amount of every substance present will then be known, and solutions can be easily and quickly made, and exactly reproduced at any time. The cost will be much less. When the persulphate is used, the amount of sulphuric acid can never be known, and solutions prepared according to the directions given for its use will vary one from the other, and vary largely, except by accident. The best quantities to take can easily be calculated from the details given in Mr. McIntosh's article referred to above, or in formulas given for the intensification of collodion plates, in almanacs and handbooks that refer to the subject.

ON THE PRODUCTION OF SILVER PRINTS WITHOUT TONING.

By Matthew Wilson in "The British Journal of Photography."

A SILVER print, considered simply as such, and judged from a purely technical point of view, altogether apart from any value which may attach to it from extrinsic causes, is, I think, dependent upon two things for the place it is found to hold in popular estimation.

Of these the one is its appearance, whilst the other, of quite equal importance, is its permanence, a term here merely relative, no doubt, but none the less real.

Both considerations are, accordingly, of the utmost consequence to the printer. Knowing that, by reference to them, the merits, other than pictorial, of a print are usually estimated, the photographer, however much he may be disposed to depart from the traditional lines of manipulation, cannot afford to be neglectful of either. To them also, as a necessary consequence, other considerations not without weight, as, for instance, increased time and cost, and the difficulties attending the working of particular printing processes, are in practice largely subordinated. The latter, are, we may suppose, looked upon as evils for which no remedy exists, and as restraints of which the printer would be glad to rid himself could he accomplish this without the sacrifice of the two characteristics which determine a good silver print.

Admitting this to be so, I have often wondered why the task of devising cheaper and simpler modifications of our existing processes for printing in this medium has received so little attention from those engaged in photographic work of an experimental character. One would think that the subject, being essentially of practical utility, would appeal to such investigators. Our ordinary silver processes, whilst much may be said in their praise, are both tedious and relatively costly. Our results, I grant, are remarkable for their excellence, but that, satisfactory though it may be to those of contented mind, is not the point at issue. The question really resolves itself into this, cannot results equally excellent be obtained with less outlay, with less expenditure of time, trouble, or money, as the case may be? Of course, the answer may be in the negative as well as in the affirmative; but, in the absence of the experimental data necessary to decide this point, we are not justified in coming to either conclusion on *a priori* grounds alone. For this reason, then, it is somewhat to be regretted that there is so little tangible evidence at command to enable the photographer to speak with authority upon a point so vital to his interests. We must not, however, overlook the fact that, from indirect sources, it is possible to glean some information which may serve as a starting-point to beginners in this investigation.

Taking the matter of permanence first, let us avail ourselves of the facts furnished us by our daily experience. It is usually contended, and, I think, with much reason, that, of two silver prints, the first of which has been toned with gold, fixed and properly washed, and the second merely fixed and washed without toning, that which has received the deposit of gold will prove the more lasting. There is, indeed, such an abundance of convincing evidence of an experimental character available in proof of this proposition, that it may well be regarded as incontrovertible. The evidence, in point of fact, dates from that period in the early days of photography when prints on paper supplanted collodion positives on glass.

Unfortunately, however, the proposition, simple as it appears at first sight, is not always rightly understood. It has already been said that the term, permanence, in the case of a silver print is merely a relative one. Unless we are careful to bear this fact always in mind, we may be tempted to argue that, because the "life" of an untoned print is admittedly shorter than that of one which has been toned with gold, in the first place, therefore, gold-toning is necessary to permanence, and in the second place, that untoned prints are necessarily evanescent. Neither conclusion is supported by experience. All that practice really teaches us is that the use of gold solutions for toning purposes serves to increase the permanence of the prints. We are not entitled to regard it as essential to that permanence unless proof is forthcoming in support of the assertion that silver prints not so treated are more than ordinarily short-lived. As a matter of fact, however, nothing in the nature of such proof can be brought forward. All the evidence points to a very different conclusion. Take, for instance, the deservedly popular gelatino-bromide paper printing process. In the vast majority of cases, prints in this medium are produced by simple development, without toning of any kind. Yet the permanence, always using that word in a relative sense, of these prints has, by the evidence of time, been very convincingly demonstrated, and is now, I think, pretty generally admitted.

Gold-toning, then, is not essential to permanence, though it remains none the less true that a gold-toned print is, in general, more lasting than an untoned silver one, from the circumstance that, of the two, the more costly metal is less liable to suffer change through the operation of chemical agencies

The question of permanence being thus disposed of, the matter of the appearance of the print next claims our attention. Viewing the subject in its practical aspect, it seems to be pretty generally agreed that some form of toning for silver prints (excluding, perhaps, those produced by development) is, on æsthetic grounds, a necessity. Such a conclusion, however, will hardly bear the test of rigid analysis. Its character is at best tentative and provisional. We may, notwithstanding, accept it in a restricted sense, making it an expression of the state of our present knowledge of the facts, and regarding it always as a proposition which we shall have to qualify in the light of a wider and more discriminating experience.

There is certainly a very intimate connection between toning, using that word in its common acceptance, and the appearance of the finished silver print. It would, indeed, be strange were it otherwise. The existing printing-out processes in which silver is the sensitive medium do not exhibit much diversity of character. We find in each case that there is very little departure from certain hard-and-fast rules which have been formulated for us by our predecessors in the field, whether it be in the matter of the actual formulas employed or in the conditions laid down for the working out of the process. The bearing of this on the relationship of toning to the appearance of the print is, of course, very evident. Amongst the rules given for the successful working of these processes, toning occupies a leading place, and this simply because, without its aid, it has been found impossible to produce a really good silver print upon paper prepared according to the orthodox formulas. These formulas being, as has been said, nearly identical in character, the result in all cases is necessarily the same. Consequently, the process of toning has been somewhat unduly exalted, a recourse to it having come to be looked at as one of the conditions indispensable to success.

My readers (assuming them to have taken the trouble to follow me thus far) will readily see that such a conclusion cannot be regarded as inevitable, inasmuch as it rests upon insufficient data. All that can safely be said upon this head is that toning is found to be indispensable under certain defined conditions, from which we are careful not to depart. It by no means follows, however, that when we cease to observe these conditions, or that when we alter them, or substitute others for them, all of which things we are, of course, at perfeet liberty to do, it by no means follows, I say, that, under the changed circumstances, toning will continue to occupy its old place as a determining factor. Let me here cite, as possessing a bearing on the point at issue, one or two facts, which serve to demonstrate that, even in the case of a silver print produced in the usual way, the beauty of the result cannot be attributed to the toning alone. Take the case of an untoned print upon gelatino-chloride paper. Its appearance, when fresh from the printing frame, is, I venture to say, and I think most will admit, as rich and beautiful in its way as any gold-toned print can be. In a few cases, perhaps, the color may not be so agreeable as that of a toned print, though this circumstance has of late years been much less noticeable than formerly. With the better brands of paper, and when printing in diffused light as is the invariable rule, such crudeness is seldom apparent. Though not lasting, this beauty of what we may regard as the type of the modern silver print sufficiently shows that, in so far as appearances are concerned, silver compounds are as capable of holding their own as those of gold.

Conversely, let us for a moment consider that rarer type of the skill and intelligence of the photographer, the gold print. By the term I must not be understood to mean the silver print in its final state, after it has been coated with gold by treatment in the toning bath. The expression is to be interpreted as indicating that species of picture obtained by the direct action of light upon paper sensitized with a compound of gold. As the action is comparatively slow when a gold salt alone is employed, it is generally found necessary to combine with the chosen compound a body of a more sensitive character, such, for instance, as ferric oxalate. On exposure to light, the oxalate undergoes speedy decomposition, as in the process of platinotype printing, the change being accompanied by the formation of an image in metallic gold, due to the simultaneous disintegration of the associated salt.

Now, the appearance of a print produced in this way is not of that surpassing degree of excellence which we might be led to expect by an experience derived merely from the use of gold solutions for toning purposes. Any merit that a gold print may possess must be attributed to its color alone. In that combination of richness and depth with extreme delicacy of effect, with which all silver printers are familiar, a print in this medium is utterly lacking. The general effect, indeed, as often as not, is somewhat dull and flat, particularly in the half-tones. Weakness is another feature characteristic of the gold print, though, perhaps, this defect may in some measure be due to the difficulties of manipulation having been only imperfectly mastered.

In the gold print, then, we find a fresh proof in favor of the conclusion that the orthodox silver print is less indebted to the toning process for its appearance than is commonly supposed.

I pass now to a brief review of the advantages which would accrue to the photographer under an altered condition of things, assuming it were found practicable to simplify and improve our existing silver-printing processes. The first, and perhaps the most important, of these is the saving in cost which might be effected. Supposing it were found possible to produce a good silver print of the average type by means of a formula which should not involve recourse to gold toning, the saving effected from this source in the expenditure of the printer would be by no means inconsiderable. It is not necessary for me here to enter into any elaborate calculations. The cost of his cloride of gold, and the ratio which this cost bears to his whole outlay in the production of the print, are items which the practical photographer may very easily estimate for himself.

Hardly less important, from an economical aspect, would be the saving in time which would result as a necessary consequence of the disuse of the toning bath. In the ordinary course of things, working under the usual conditions, the amount of time spent in toning operations is large, and, indeed, excessive. Under the circumstances, this can hardly be remedied. In the treatment of a batch of silver prints in the toning bath, it is found impossible, after a certain stage is reached, to maintain the rapid working of the gold solution without an addition of an extra quantity of the chloride. As this, however, means an increase in cost, the photographer in general deems it wiser to let things take their natural course, the result of which is that the process of toning, regarded as a whole, is apt to be unduly prolonged. Besides the time that is lost in the treatment of the prints, there is, in addition, that which is required for the preparation of the necessary baths as well as that which is expended in the recovery of the gold from the disused solutions. These items must all be taken into account in making up an estimate.

To the advantages, saving in cost and saving in time, a third may be added, namely, saving in labor. Under the system now practiced, a good silver print is the result of a series of operations which, with one exception, make no great demand on the intelligence and executive ability of the printer. I say with one exception, for the process of toning, necessitating as it does in a marked degree the exertion of the operator's skill, care and patience, must be regarded as a case apart. Toning, in fact, is an art in itself, and as such cannot be carried out in a superficial and mechanical fashion.

The silver-printer's task, therefore, is in some measure an exacting and laborious one, though, no doubt, it will be contended that he is amply repaid for all his pains by the quality of the work he produces. The contention may be admitted, but does not serve to settle the question raised as to whether the trouble expended is, from the nature of things, a necessity.

Lastly, there is another advantage, which would, I think, result from the simplification of our existing printing processes, and which, though perhaps not attainable in every case, must not be overlooked.

I refer to what in all likelihood would be the result of newer and simpler conditions of working upon technique, namely, a raising of the average standard of excellence in the matter of the appearance of the print. In saying this, however, I do not mean to convey the idea that we should be able to produce a better class of work than that turned out by the professional photographer now under the old system. All that is meant is that we should probably have more good prints by having fewer bad ones. In other words, the difference, frequently apparent to a painful extent, that distinguishes the work of the professional from that of the amateur, would tend to become less as the practical difficulties of the process were more easily overcome.

(*To be continued.*)

SOCIETIES

THE San Diego (Cal.) Camera Club was organized on May 12th, and started off with a charter membership of thirty-seven. The officers elected for the first year are as follows: F. A. Carpenter, President; J. E. Slocum, Vice-President; E. L. Rector, Secretary.

An important meeting of the Los Angeles Camera Club was held on May 11th, and officers were elected as follows: C. O. Valentine, President; W. D. Campbell, Vice-President; Dr. W. R. Jones, Treasurer; Alice J. Stevens, Secretary.

The Portland (Me.) Camera Club held its second annual meeting on May 14th, and elected the following officers for the ensuing year: George F. Gould, President; N. W. Edson, Vice-President; C. B. Thurston, Secretary; J. H. Lamson, Treasurer.

The annual meeting of the Camera Club, of Detroit, Mich., was held on June 5th, and officers for the ensuing year were elected as follows: E. W. Sprague, President; A. D. Noble, Vice-President; W. E. Winkler, Secretary-Treasurer. The Club has now a membership of nearly one hundred.

The annual meeting of the Brooklyn Academy of Photography was held on June 5th at the rooms of the Club, 177 Montague street, and the following officers were elected: William Arnold, President; F. M. Lawrence and A. N. Cook, Vice-Presidents; H. E. Hayes, Secretary; A. S. Ingram, Treasurer.

The first annual meeting of the Meadville (Pa.) Camera Club was held on June 1st, and the following officers were elected for the ensuing year: J. E. Bailey, President; P. Willett, First Vice-President; Mrs. J. D. Downing, Second Vice-President; A. W. Ellsworth, Secretary; Mrs. A. L. Ballinger, Treasurer.

A meeting of the Photographic Section of the Pittsburgh Academy of Art and Science was held on May 23d, and officers were elected for the ensuing year as follows: G. W. Allyn, President; Thomas Chester, Vice-President; M. W. Lewis, Secretary; O. C. Rieter, Treasurer. Arrangements were made for the collection of lantern slides for the annual exhibition, which will be in addition to those sent by the International Lantern Slide Exchange.

OUR
Reviewer.
Schools of Practical Process Engraving

THE position held in current photographic literature by the *Photo Miniature* is indicated by the fact that two numbers of the first year's issue, Modern Lenses and The Pose in Portraiture, are already in their third editions, and No. 6, Orthochromatic Photography, is in its second. Each of these three numbers have now reached their eighth thousand.

THE May, 1900, Catalogue and Bargain List No. 13, issued by Ralph J. Golsen, of Chicago, is received, and contains a large and complete assortment of photographic apparatus and materials. It is accompanied by a catalogue of backgrounds when requested and will be mailed on application.

CAMERA CRAFT is a new-comer into the field of photographic literature and is published in San Francisco, Cal., the first number bearing date of May, 1900. The get-up of this magazine, which it is announced will be issued monthly, is distinctly artistic and attractive, its reading matter good and its illustrations excellent. The magazine is printed on heavy coated paper, and enclosed in handsome covers, embellished with an artistic design printed in two colors.

The western coast should be proud of this publication, which we gladly welcome to the field

THE PHOTO BEACON Souvenir of the late Chicago Photographic Salon is a very tastefully arranged collection of reproductions of pictures exhibited, which, as the editor says in his preface, includes "at least one print from each exhibitor's work, excepting in three cases where permission was refused." These prints are the same that appeared in the June number of the *Photo Beacon*, but each printed on a 7 x 10 page by itself and daintily bound. While this Souvenir contains some excellent examples of pictorial work, it is, we think, most valuable as a teacher of what not to do in photography, and it should have a wide sale and careful study. It may be obtained of our publishers, price 60 cents, post paid.

THE demand for "First Step in Photography," by F. Dundas Todd, has necessitated reprints until the popular little book has now entered upon its fiftieth thousand, and in commemoration of the event the publisher has issued an *édition de luxe*, printed on heavy enameled paper, and tastefully bound in red flexible leather. This little book makes a very handsome souvenir, and one of which its publisher may well be proud.

THE "Catalogue of the Third Annual Photographic Salon and Exhibition" of the Pittsburg Amateur Photographic Society is a well-arranged and attractive publication; it contains, in addition to the list of exhibitors, a number of halftone reproductions of their work, and is neatly bound in dark blue cover, with title in gilt.

From "CAMERA NOTES," New York. Report of the Research Committee. "Agfa." This new intensifier we have tried with excellent results. It is a one solution intensifier, which seems to lie midway between the platinum and the mercurial in its effects. That is to say, contrast is not so greatly increased, but the whole plate is also strengthened, giving it a printing quality lacking before. Another advantage is in having only one solution, where the process of intensification can be watched and stopped at just the right moment. With mercury it is rather a lottery as to the ultimate results of the intensification. The deposit produced with Agfa is of about the same color as the original. A preliminary trial with a lantern slide of brown tone, made on Paget plate, gave an intensification of the same color. This would not be the result with mercury.—J. ASPINWALL, Chairman.

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PHOTOGRAPH BY FALK.

ANTHONY'S

Photographic Bulletin.

EDITORS:

PROF. CHARLES F. CHANDLER, PH.D., LL.D

W. I. SCANDLIN.

VOL. XXXI. AUGUST, 1900. No. 8.

THE TWENTIETH ANNUAL CONVENTION.

THE twentieth annual convention of the Photographers' Association of America, which closed its session on the 27th of July, at Milwaukee, Wis., goes down into history as one of the most successful conventions of recent years. In the matter of attendance, the number of members present was larger than at any recent convention. The display of goods and apparatus on the floor of the exhibition hall was more representative and inviting, and the enthusiasm of the entire assembly was above the average. Business meetings of the Association were held in a room off the exhibition hall, and were on every occasion attended by a large number of interested members, in most instances filling the hall to its utmost capacity. The lectures and talks provided, were on subjects of deep interest and importance to the craft, and cannot fail to have been of great value to all who heard them.

The pictures in the art exhibit varied in quality from some unusually good productions to others which may be said to have been even below the standard of later years. Between the two extremes, however, there was a very fine middle line, in which was hung a very large collection of thoroughly excellent work.

When the fact is taken into consideration that this convention was the first held in the West in a long number of years, the high average of the pictorial exhibit is remarkable, and it is safe to predict that a second convention held in the same general locality will show a much higher proportion of good work than did this one. Many of the Western men exhibited for the first time, while the East, which has had the benefit of the conventions for the last several years, was not represented with the same proportionate number of exhibits. The selection of Detroit

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as the next place of meeting renders it probable that many of the newer exhibitors in this convention will, taking advantage of Professor Beck's very able lectures, and Professor Griffith's criticisms, send a collection of prints to Detroit which will greatly outrank their own work of the past year.

A spirit of interestedness in the actual work of improvement was noticeable throughout the week, and the lessons learned from the comparisons of work, exchange of ideas, study of methods, and attendance on lectures and demonstrations will be put into practice during the coming year, to the advantage of the individual worker and of the Association.

THE OFFICIAL REPORT.

In accordance with the custom of the Bulletin a full report of the meetings of the Convention will be found in the following pages, which we believe will be much more satisfactory to our subscribers than a condensation and rewriting of them, and which we take pleasure in presenting to the photographic fraternity, in the hope that the efforts of the Bulletin will be appreciated.

CONVENTION NOTES.

As in previous Conventions of late years, the Aristo School of Photography was a very important element in the instruction of the Convention. This school was held each morning prior to the business meeting of the Association, and was conducted by Mr. Harry Fell, of the Aristo Company, whose running talk and ready answers to all kinds of technical questions did much to clear away difficulties which are often met with in the printing room. Mr. Fell's long experience in this work and readiness to impart the knowledge he has thus acquired make this school an important feature of Convention work.

◆

The very large display of work in the exhibit of the American Aristotype Company contained one new feature of interest. This was to be found in the large number of prints made upon Aristo Platino paper, backed up with paper of the same kind. The prints thus made were mounted by the top edge only, and being unattached at the bottom and sides presented a very effective and pleasing appearance. The paper being backed, entirely does away with the ordinary curling of the print when mounted on one edge only, and should find a wide field of usefulness in the profession.

◆

All conditions seemed to favor the Convention, the weather being delightful, with the exception of the opening day, Tuesday, on which some rain fell in the morning. The City of Milwaukee looked its best, and the spirit of hospitality was evident from the beginning to the close of the Convention. Mayor Rose, in his address of welcome, promised for the city nothing more than was received at its hands, and the several entertainments planned for members and lady guests of the Association were entered into with hearty enjoyment by all.

* * *

A PLEASING incident of the Convention was the presentation in the Club Room of the Pfister, on Thursday evening, to President S. L. Stein, just before the party was made up for Whitefish Bay resort, of a beautiful cut-glass punch bowl, filled with American beauty roses.

Professor A. H. Griffith acted as master of ceremonies, and made the presentation speech in his usual happy style. He said:

"Men sometimes are blamed for the good things they do, when they have tried to do their very best to serve others unselfishly. It may be your fortune to stand in this position in view of the many things you have done to make the P. A. of A. Convention of 1900 a success; but should anything you have done or omitted to do bring you censure you can still feel that you have done your very best, and you will have a consciousness of right that will comfort you. We, your friends, know that the success of this Convention is largely due to your active and self-sacrificing labors, and we wish to present to you as a slight token of appreciation this bowl. Accept it in remembrance of those who have given it, but not the roses—they are not yours, they are meant for another whom we see present, Mrs. Stein; perhaps she may claim the bowl, too; if so, you will, of course, lend it to her; but otherwise it belongs to you. Accept it with the kindest and best wishes of the true friends you find about you."

Mr. Stein was unable to express his feelings of the moment, but accepted the gift, and asked to be excused from a speech. He really thought it would belong to Mrs. Stein anyway, for what was his was hers, and she ought to make part of the speech if one was needed.

Mrs. Stein came gracefully to the rescue, and declared that she hoped she might have the pleasure of seeing the bowl emptied many times by the friends of Mr. Stein and herself.

* * *

THE action of the Photographers' Association of Wisconsin, in giving up their annual State Convention and turning all their energies into the work of aiding in the success of the National Convention, was a delicate courtesy which met with due appreciation. The entertainments planned by the State Association were greatly enjoyed by all who participated in them.

* * *

MR. T. ASANUMA, a prominent photographic dealer of Tokyo, Japan, was present at the Convention, and may without question be mentioned as the one who came from the greatest distance. Mr. Asanuma has been making an extended tour of the world, having visited the leading cities, including New York and Chicago, and being in the latter city on Convention week, went up to Milwaukee for a short stop on his way across the continent. His impressions of the Convention were very flattering.

PROCEEDINGS OF THE TWENTIETH ANNUAL CONVENTION OF THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

OFFICIAL REPORT.

THE Twentieth Annual Convention of the Photographers' Association of America was held at Milwaukee, Wis., from July 23d to 27th, inclusive, under the Presidency of S. L. Stein, of Milwaukee.

Monday, the 23d, was devoted to completing arrangements at the Exposition Building, where the Convention was held, and to receptions by the Wisconsin Association and the Milwaukee photographers to visiting members and delegates at their respective hotels.

Tuesday, July 24th.

The Convention was called to order by President Stein at 11 A. M., Tuesday, July 24th, in one of the halls at the Milwaukee Exposition Building, which was crowded to overflowing, there being standing room only.

After pronouncing the Twentieth Annual Convention formally opened, President Stein introduced the Hon. D. S. Rose, Mayor of Milwaukee, whose address of welcome follows:

Address by Hon. D. S. Rose, Mayor of Milwaukee.

"Mr. President, Ladies and Gentlemen: I deem it my solemn duty to enter a protest. I believe that the Committee of Arrangements is deserving of a resolution of censure (pointing to a pitcher of ice water on the President's table). I observe that there is a water pitcher on the table, labelled 'Ice Water,' and this is the city of Milwaukee. (Laughter.) It is a reflection upon our reputation. You all know that we manufacture a product that has made Milwaukee famous. (Renewed laughter.) And I supposed, of course, that the Committee of Arrangements had provided us this morning with at least one pipe line.

"I am very glad, indeed, to have the opportunity as a representative of this city to extend greeting to so large an assemblage as is gathered here this morning. It is something of a surprise to me, because I did not understand the magnitude of the interest represented here; still, I ought to have known that when Milwaukee furnishes a President for an Association, it could be no small affair. (Applause.) There are so many demands upon our citizenship to furnish men fitted to occupy places of trust and distinction that we are not compelled to recognize small fry organizations; consequently I should have known that when Milwaukee gave the man, the Association would be worthy of him; and I am sure that such is the case. (Applause.) I undertake to say that there are many here to-day who are strangers to our city, and who have come here for the first time. Let me say then, that we have here a city of some 300,000 population; and while our commercial interests are not great, our manufacturing industries are large. The manufactured product of our city during the last year was valued at $158,000,000, and with this magnificent showing, it seems to me that our city is entitled to be recognized as one of the great manufacturing centers of the United States. (Applause.) And while it is true that the manufacture of one product, and the enterprise and progressiveness of those engaged in that industry, have served to gain us that distinction all over the world, it is also true that that product is only one of many that have all contributed their full quota towards the grand total, and which have all helped to make Milwaukee famed as a manufacturing center. The beer product of Milwaukee last year amounted to nearly $15,000,000; and when you consider this in comparison with the total I have named, you can see that it pales into insignificance almost; and by that I don't mean, however, to cast any reflection upon those engaged in that magnificent industry, because we esteem it such. Our population here is cosmopolitan. Every civilized nation upon the face of the globe finds a representation here, and we find all of them working together in perfect harmony, in perfect accord, all animated by the same mission, to accomplish the greatest good for the greatest number. The bringing in of so many foreigners here has served to bring in the customs of the old countries from which they came; and, as a result, we maintain perhaps the most liberal government of any city in the United States. We propose—and it is our policy—to grant the greatest liberty consistent with good order and with good morals. We can maintain this policy here; we have no difficulty in doing so; for the reason that our people are a law-abiding and order loving people; the percentage of crime here is the lowest of any large city in the Union; and while we never require our places of public resort to be closed, and while we are a large beer-producing city, it is a fact, and one which is frequently observed, that you will see here less intoxication upon the public streets than in any other city in the whole country. (Applause.) If you have time I would invite you to visit our public institutions. Our City Hall, erected only a few years ago at an expense of a million dollars, is one of the finest office buildings of its kind in the country; our splendid public library and museum building are great monuments to commemorate the enterprise and the intelligence and thrift of our people; our public museum collection is the fourth largest of its kind in the United States; and our public library collection compares favorably with that of any other library in any large city of the country; it is a place of popular resort for the youth of our city; you can go there almost any day or evening, and you will find our children there engaged in prosecuting those opportunities for study that the institution affords. Our public school system is a part of the public school system of the old Badger State of Wisconsin, a system that has served to carry forward the movement of education, that turns away from its portals the child of not even the humblest parentage, but guarantees to all equal opportunities for education and advancement that follows in the wake of improvement. Upon these firm foundations many of the professional and other successful men of our State have built successful careers, We are proud of our educational institutions, not only of Milwaukee, but of the great State of Wisconsin. They compare favorably with those of any State in the grand constellation of this glorious Union. Our park system, though young in years, is old in beauty and attractiveness; and if you have leisure I know that you will enjoy a visit to some of our numerous parks. The question of how to establish a park system is one that has agitated students of political and social economy throughout the whole land, whether to have one large park in a city, or a large number of small parks; this has been frequently debated and much discussed; but we have arrived at the conclusion that it is best for our population to have a large number of small parks; and we have established them, taking them almost to the threshold of all our people, so that the poor may have opportunity to enjoy here what only the rich can enjoy in the larger cities of our country; we save transportation expense, and we save time, and all that, by placing our parks in the various sections of the city where they are accessible to all. I know that you will enjoy a visit to them.

"We are always glad to have strangers come and meet us; we are glad to have them see what we have, because we aim to keep up with our sister cities in the rapid march of progress. Ours is a city of homes; we have no tenement house district; and while we employ nearly 100,000 operatives in our commercial and manufacturing industries, it is a fact that the large proportion of them own their homes; and you can go out into the outskirts and find the cottages of our laboring people and see them there rearing their children in the sunlight and the fresh air that the great Giver of all Good intended them to enjoy, carrying in its wake health and cleanliness, and making to the advantage of our city in all ways.

"We want you to feel while you are here that you are our guests, that we are glad to have you with us, and that anything we can do to contribute to your happinese will be gladly done; we want you to feel when you return to your homes that you have not only profited by this meeting of your Association, which is formed for your advancement and the promotion of your interests, but we want you to feel that you have had a pleasurable time also through our efforts here, and that you will look back to this visit to Milwaukee with the happiest of recollections.

"In behalf of our people I extend you a most cordial welcome. I thank you." (Applause.)

After the applause following the Mayor's address had partially subsided three cheers and a tiger were proposed for Milwaukee's worthy Mayor by the President, and were given with hearty acclaim.

At this point Mr. G. Cramer, of St. Louis, was seen coming into the hall, and was asked to come forward and be seated on the platform by the President. The following were also seated on the stage, viz.:

Ex-President John Schneider, of Columbus, O.; Ex-President C. M. Hayes, of Detroit; Ex-President F. W. Guerin, of St. Louis; also of the present corps of officers, Mr. George B. Sperry, First Vice-President, of Toledo; George M. Edmondson, Second Vice-President, of Cleveland; and J. George Nussbaumer, Secretary, of Buffalo.

The President called for reading of communications, and the following were read by the Secretary:

" *To the Photographers' Association of America :*

" GENTLEMEN,—Some special work which cannot be attended to later, keeps me away from you this year. You don't know how I have struggled to content myself with staying home this time—but I cannot be content and want more and more every day to kick over the traces and take the cars for Milwaukee.

" I promise not to do it again, and you can count on me next year as being pretty near the middle of the puddle.

" With best wishes for a most enjoyable convention.

" Yours truly,
" PIRIE MCDONALD."

(Also Letter.)

" LOS ANGELES, CAL., July 17, 1900.

" MY DEAR BARROWS,—Enclosed please find a check to pay my dues for 1900. Sorry I can t be with you to enjoy the big Convention you will have. Remember me to all the boys. Will see you next year.

" Very truly yours,
" GEO. STECKEL."

(Telegram.)

" PITTSBURG, PA., July 21, 1900.

" J. GEORGE NUSSBAUMER,
" *Secretary Photographers' Association of America:*

" FRIEND NUSSBAUMER,—Sorry I can't be in attendance. Wish you a most successful Convention.

" DAVID ROSSER,
" *Honorary Vice-President,*
" Photographers' Association of Pennsylvania."

President Stein then delivered his address to the Association.

Address of President Stein.

BANE OF JEALOUSY.

" Fellow-Craftsmen : I have felt a little curious at times as to how the annual speech from the President appears to you—whether it is a part of the proceedings you would be sorry to miss, or whether it is an infliction to be meekly submitted to.

" I heard someone say the other day that one definition would equally apply to nearly all the speeches he had ever listened to. That is, that they were one-tenth sound sense and nine-tenths flummery.

" Now, I do not want to talk flummery, nor do I suppose you want to listen to it. But there are one or two points I would like to touch upon which have nothing to do with fads or theories. They are sound sense and solid business.

" One of them is professional jealousy. I wish that some of our professional friends could realize more fully the blighting effects of this needless evil and how inevitably it reacts to the prejudice of those who display it. It is not merely that it is a grudging confession of pitiful inferiority, but it cankers the very root of that mutual trust and esteem, without which such an organization as ours must ever fail of achieving its most valuable purposes.

" We want to come together more freely upon an even footing of friendly confidence, admitting of a generous, fraternal rivalry that shall leave no room for carping criticism or little-minded bickerings. If one lags behind us in the race, let us cheer and encourage him. It will mean no loss to us, while it may mean much gain to him, and if it stimulates him to his betterment not only he but the whole profession is a gainer; if one forges ahead of us he has earned our applause and should not be denied it.

" No man under the canopy ever found himself, or any other man, bettered by harboring a prejudice, whether it be well or ill founded. It is like a wall that girds us in from all the beauty and the splendor of the broader horizon of goodwill and fellowship that lies there—wasted to some of us, simply because we will not trouble to step outside the wall to enjoy it."

NEED OF ORIGINALITY.

" The second point is the need of more original thought and treatment. It seems, somehow, as if there are relatively few who care to use their wit and ingenuity for the creation of new effects in treatment, method or display. The remainder seem to be content to be simply copyists. Even in such a matter as a mount, for instance, many are content to blindly follow the lead of some clearer-witted member of the craft, instead of setting their wits to work to create something distinctive of their own. Now, this free and easy appropriation of another man's ideas is distinctly a confession of inferiority, which any man who takes a legitimate pride in his profession should be ashamed to make. The men who do this sort of thing are not lacking, as a rule, in technical knowledge, in experience or in capacity. They can do better if they will do better—why is it that they wont?

"All they would need to do is to follow Etty's precept. Do you remember his reply to the man who asked him what medium he used to obtain such purity of coloring? He said: 'Brains, sir.' That is all the copyist needs to do to lift himself out of the rut he travels in—use his brains.

"And the third point I want to touch upon is prices. The cutting of prices is a great and crying evil, which is harmful to all and helpful to none, not even to the man who pays the low prices, for he gets the worth of his money—perhaps—but certainly no more."

KEEP UP PRICES.

"Keep up your prices. If you make cabinets worth $10 a dozen, charge $10 for them. Stick out for a good price for good work, and don't think there's either money or glory in cutting the price to $5.

"Remember that your prices should never be wholly controlled by present and local conditions, though they are always to be taken into consideration. Back of them there is always a vista of years of effort and study, for which there was seldom, if ever, a present reward, though hope tinged the future with all sorts of rainbow beauties. And this is that future. Now, if ever, is the time for those hopes to be realized. But that realization rests with you, and by cutting prices you ensure the surest of all possible means of never attaining it.

"When Whistler, the famous artist, exhibited a series of color sketches some years ago, at the Grosvenor gallery in London, John Ruskin declared that it was disgraceful to call such daubs pictures, and accused him of 'Flinging a paint pot in the face of the public.' Whistler sued him for libel. On a purely technical point he gained his case, but the justice of Ruskin's criticism was approved by the verdict of one farthing (that is, half a cent) damages."

WHISTLER'S RETORT.

"But, in the course of that famous trial, Whistler made a reply that is especially to the point in this connection. He was being cross-examined and had stated that these 'Nocturnes' and 'Symphonies,' as he fancifully named them, took him about two hours to paint, and he charged $1,000 apiece for them. The counsel asked him: 'And do you really contend, Mr. Whistler, that a picture which only took you two hours to paint can be honestly worth $1,000?'

"And Whistler said: 'You forget the years of study that made it possible for me to paint that picture in two hours.' Now that reply was a good one, and, when fixing your charges, you want to remember the years of study that have brought whatever powers you possess to their fruition of performance.

"But that fruition will depend as fully upon the cultivation, upon correct lines, of your perceptive appreciation of artistic beauty and tasteful treatment as it will upon the mastery of the technical details of your profession. Be especially chary of fads, for they generally run to extremes, and extremes are always to be avoided."

LIFELESS FORMALISM.

"There has been a striking similarity between the trend of photographic art of recent years and that of the European schools of art since the days of the little band of enthusiasts who are now known to history as the pre-Raphaelites. They revolted at the lifeless formalism of the art of their day and aimed to correct the prevalent conventionalism of mediocrity by infusing art with a purer and more elevated spirit.

"One means by which they aimed to do this was expressed in their motto that 'Nature should be painted as it is, not as it looks to be.' With the rabid enthusiasm that reformers so often show, they went to extremes that many thought supremely ridiculous. If a bird was so far away in a landscape that it was hardly more than a speck in the picture, they would yet paint that bird's eyes because the bird certainly had eyes, even if the observer was too far away to see them.

"When Sir John Everett Millais painted the 'Huguenot' he spent seven months painting the moss upon the wall, and when Holman Hunt sent his 'Carpenter's Shop at Nazareth' to one of the Paris expositions, the painting of the shavings was the sensation of the year. The Parisians raved at the care with which even the most trivial detail of those shavings was given, but when the artistic merit of such rendering was discussed they said little, but shrugged their shoulders, very expressively."

A REACTION.

" As was to be expected this fervor was followed by a violent reaction and the pendulum swung from the one extreme of the pre-Raphaelites, where form and accuracy of detail were chief essentials, to the other extreme of the impressionists, as in some artists of the Barbizon school, who paid little attention to drawing but much to color impressions and atmospheric effects.

" And now we are passing through another reaction, but one which is less violent. The best current art avoids both extremes, but combines the best features from each.

" And so it has been with photography. The first impluse to artistic betterment came in the form of a craze for sharpness. It was, as with the pre-Raphaelites, carried to undue extreme and led many to revolt. And then came the swing of the pendulum to the other extreme of fuzziness. From pictures that were too sharply defined we came to have pictures that, as with the impressionists, lacked any sort of definition at all.

" And now, as with the painters, there is a second reaction, which is bringing us to a condition which is healthier and saner than either extreme can ever be, for it avoids their faults and combines their merits.

" It is upon such lines that the best photographic art of to-day is being turned out, and it is upon such lines that I would urge you all to work, for therein is the truest artistic expression, and thereby will you ensure your most certain reward."

President Stein: " The Executive Committee had a meeting a short time ago, and made a change in regard to the hanging of pictures (President Stein read the clause referring to same in the regulations printed and sent out in advance of the convention). The Secretary will read the amended action taken by the Executive Committee in relation to this matter."

Secretary Nussbaumer: " It is moved that the exhibits rejected by the Hanging Committee be hung, and that only such exhibits as pass the Hanging Committee be awarded a certificate of acceptance as provided in the rules governing the exhibition." This was seconded and carried. (Applause.)

President Stein: " In this way no pictures were rejected, even though not hung in the class where entered; they are hung aside, but they will not get a certificate of acceptance. The next order of business is reports of Committees. There being none at this time we will pass to the next order, and I take pleasure in introducing Mr. W. I. Scandlin, editor of ANTHONY'S PHOTOGRAPHIC BULLETIN of New York. He comes from New York (applause), and will address us on 'The Progress of Photography.' "

Progress of Photography.

Mr. President and Members of Photographers' Association of America:

" It would be manifestly impracticable at this time to follow from its beginning the steps by which photography in little over half a century has reached the position that it occupies in the world of affairs to-day.

" The story of its discovery and growth up to within a comparatively recent date has been presented to this association at former conventions by men better fitted to recite its history, and to claim a share of the glory attaching to its successes than am I. It is, therefore, my purpose to speak of those advances that have been made during the past four or five years only, which, I believe, will be found to compare favorably with the progress recorded in any similar period since its beginning. They will be found, however, to consist more largely in the development of lines previously suggested, in the evolution of processes from experiments undertaken in the past, and in improved methods and appliances, than in new or startling discoveries. We, members of the Photographers' Association of America, are mostly wedded to and bound up in a single department of photographic work, that of portraiture, and I sometimes wonder if we fully realize the tremendous scope of photography and the fact that while we are utilizing it in our own field of labor, others, working with the same tools we employ, are achieving results of great importance in the world of science, commerce and natural history, and that the field it covers is extremely broad, and widening year by year. It is being appropriated by one department after another of scientific and mechanical work, until to-day there is scarcely to be found in this or any other progressive country, a laboratory, hospital, college, observatory, machine shop or student's den, without its photographic equipment, and it is along the lines of scientific photography, I think, that the most startling progress of the later years is to be found. At any rate it is so to the casual observer, for within this time the anatomy of man has been made visible to the sense of sight through the discovery of the X-Ray by Prof. Wilhelm Conrad Roentgen, whose achievement has been recently recognized by the National Academy of Sciences at Washington, in the award of the Barnard medal, an honor only awarded once in every five years, and then to the person adjudged to have made the most important discovery in the scientific world during that period.

"It is pleasing to note in this connection, also, that radiography has, since its discovery, received its widest and most expert application in America, and at the hands of American workers.

"Photography as applied to astronomical research has also been the means of important discoveries in the solar system, and in the hands of such men as Professors W. H. Pickering, of Harvard University, Geo. E. Hale, of Yerkes Observatory, E. E. Barnard, of Lick Observatory, and other eminent astronomers, has added largely to the fund of knowledge concerning celestial matters. The most important results are looked for from its use in the observations of the sun's eclipse in May last, which are not yet fully known.

"The Brashear curved plates, for use in photographing large areas of the heavens, are a great improvement over the ordinary plate, inasmuch as by their use the natural curvature of the lens is counteracted, and all portions of the plate, even to its extreme edges, may be brought into perfect focus. A great saving in labor and material is the result, together with increased accuracy and facility of comparison.

"The experiments of Prof. R. W. Wood, of the University of Wisconsin, in photographing sound waves, have demonstrated to a remarkable degree the capability of photography as a recorder of phenomena in the scientific world. These photographs show plainly the successive vibrations of the atmosphere, as it is disturbed by a sound, which, passing through the air, produces waves that may be likened to the ripples in a pool of water set in motion with a pebble.

"Photography in its application to the study of natural history has rendered important service in the study of animal life, and the student of zoology is deeply indebted to the skill and untiring perseverance of such men as the brothers Kearton, of England, Dr. R. W. Shufeldt, of Washington, F. M. Chapman and others, who have given to the world invaluable photographic records of bird, beast and fish in their natural abodes and under conditions and surroundings of nature. Careful and important studies are also being pursued by its aid in the field of botany, and photographic investigations show us the growth and decay of plant and vegetable life.

"The importance of photography in surveying is now fully established and the uses to which it has been put by such workers as E. Deville, of Canada, Mr. Mendenhall, of the United States Coast and Geodetic Survey, Col. A. Laussedat and Commandant Victor Legros, of Paris, J. A. Flemer, of Washington, and others, demonstrate beyond a doubt its increasing value in topographical record work.

"Balloon photography, too, has become a most important branch of the military equipment of nations, its use being much more general since the advent of smokeless powders than before. The history of the war in South Africa, yet to be written, will undoubtedly contain reference to the important aid rendered by this branch of the service.

"Kite photography also has made material advance under the investigations of Wm. A. Eddy, several officers of the U. S. Army and others, and the photographing of projectiles, an important branch of military science, has improved greatly.

"Another branch of our science, mention of which seems to find a natural place at this point, is that of telephotography, the development of which is rapidly proceeding and from which many important results may be expected.

"The very exhaustive investigations carried out by Professor Russell, of England, have brought to light the fact that many bodies hitherto unsuspected of the power to affect a sensitive plate are nevertheless active to a greater or less degree and in peculiar manners. This knowledge will be sure to find application at no distant day in some form, as yet perhaps unthought of.

"A branch of photography, which, probably next to its application in the development of X-ray work, has most noticeably attracted public attention, and one which holds great possibilities in almost all fields of scientific and popular interest, is to be found in animated photography, so called. The improvements in this field during the last few years have been truly remarkable, and it is to-day a factor of no small moment in the world of amusement and instruction. America holds a prominent place in the development of the photography of movement and the work of Muybridge, Edison and others in this field has been most important. Its development has involved the expenditure of large sums of money, and its growth and still wider adaptation seem to be fully assured.

"Photography in colors, the long-sought problem of the scientist and the elusive vision of many a photographer to-day, is still unsolved, though a nearer approach to its realization seems probable with each succeeding year. Mr. Fred E. Ives, of Philadelphia, with his wonderfully accurate Kromskop, shows us images of great beauty and faithfulness to nature, not only in the brilliancy and delicacy of her colors but in the effect of atmosphere as well. If his charming effects could be translated into tangible prints instead of vanishing when the conditions that produce them are removed, we might justly claim that color photography is an acknowledged fact. Lippmann's scheme, based on the interference of light waves, is also working out some extremely interesting results, and Professor R. W. Wood's later experiments and demonstrations show decided progress on this line. Here, too, are to be found some excellent results, worked out under the McDonough and Joly-Sambra methods. With the light of the experience and investigations already made, and in view of the deep interest centering in this branch of photography among scientists all over the world it seems probable that still further progress may reasonably be looked for at almost any time.

"In its application to the printing press, photography has shown a steady and rapid improvement in recent years, and owing to its growth in this direction the literature of the day is illustrated as it has never been before in the history of mankind. The importance of this tremendous spread of illustration, I believe, cannot be overestimated as a refining and educating influence on the public mind, and it has, I think, exerted a very large influence toward creating a demand for and raising the standard of portrait photography in all quarters. It is becoming more and more a factor in the educational systems of the nations, and in this important application, I believe, America easily leads the world.

"In the field of portrait work no single discovery stands out with startling prominence, but the progress nevertheless has been steady and sturdy, and the art-science of photography, as practiced by the portraitist of to-day, stands in the business economy of our busy life as an honored profession, where only a short time since it ranked as a trade of minor importance. The growing importance of this profession may, I think, be gauged quite closely by the efforts put forth among the manufacturers and dealers throughout the world in catering to its needs and producing new apparatus and material for its use and consumption. A glance over the history of the past few years will show vast investments and development along these lines and the production of printing papers both in this country and abroad may be cited as an illustration of this statement. Large enterprises have been established and demands created by the improved products, which a few years since would have been considered impossible. It is only necessary in this connection to call attention to the various brands of the American Aristotype Company's manufacture, which have met with deserved popularity among professional photographers, or to the several gaslight developing papers introduced by the Nepera Chemical Company under the well-known name of Velox, which have found special application to the needs of the amateur and to commercial photography.

"Carbon and platinum printing, which have always been subject to fluctuations in popular esteem are receiving more attention than in previous years, and each is demonstrating its fitness for many kinds of work in a manner admitting no doubt or question.

"In the manufacture of dry plates the improvement has been more in the nature of perfecting the quality of plates already known than in the production of novelties, the orthochromatic quality and the backed or non-halation plate being much more generally used now than in the past.

"Films for use in the smaller cameras have been brought to a high state of perfection and convenience in manipulation, and for hand work and tourist purposes in general are gradually superseding the more cumbersome glass plates. An important element in their popularity is to be found in their manufacture in small rolls, making possible without waste a limited number of exposures, and also in the application of the daylight system by means of which the necessity of a dark room for loading and unloading the camera has been done away with. The very marked improvements which the last few years have witnessed in the size and perfection of the leading makes of cameras to which they are adapted has also emphasized their practicability and popularity.

"In lenses the most noticeable advance is to be found in the development and perfection of the stigmats and in the wonderful capacity of these lenses when understood. Another important achievement is in the application to these lenses of the telephoto attachments—the results obtained by Dallmeyer, of London, being the most important, while the publication of a very complete treatise on the general subject of telephotography from the pen of Mr. Thomas Dallmeyer is an important addition to the literature of photographic optics.

"The matter of control in the development of plates has received a good deal of attention during the past few years, and some important additions have been made to the list of developing and controlling agents, among which may be mentioned Ortol, introduced by Hauff, and Imogen, which, together with Agfa as an intensifier, owe their existence to the investigations of the Actien-Gesellschaft Fabrik, of Berlin. The application of ammonium persulphate as a reducing agent is also of recent date and gives promise of becoming a valuable aid in the control of density, either locally or in general.

"The attempt to combine development and fixing, first suggested, I believe, by an American, Mr. Milton B. Punnett, seems likely to prove more than a novelty.

"Specialization or individualism, such, for instance, as the gum bichromate printing method, which has found more or less favor abroad, and brush or local development of platinum prints, which has found many admirers in this country, have been the subject of much discussion and are warmly advocated by many for certain lines of work, and it may be said that both these innovations have qualities, which, in the hands of intelligent workers, possessed of the true art instinct, are possible of producing results of great excellence and variety. Like fire, however, they must be handled with care and an understanding of their power for good or evil. It is, I believe, probable that this method of controlling the print by local treatment will find increasing application in the production of large work, where strength of treatment and the evidence of individuality on the part of the artist are desired.

"The matter of copyright law is still under consideration and is worthy more careful attention than it has received at the hands of this association. The lack of progress in this direction is lamentable and serious consequences are likely to follow if the profession fails to legislate upon it at an early day. The matter will probably be brought before this convention in some form or another, and should, I believe, be carefully considered.

"The various matters to which I have called your attention in detail are evidences of material growth and progress in the science of photography, and we as photographers may congratulate ourselves upon occupying a more advanced position in our profession to-day than ever before, but our progress and position depend less upon the material advances recorded than they do upon the broadening effect that has been wrought in the mind and capacity of the photographic worker during the past few years. The increasing demand for photographic literature is an evidence of this growth, but more than all else is it to be found in that the importance of our conventions, both State and National, has come to be realized; and the value resulting from exchange of ideas, comparisons of work and methods, coupled with the lectures and demonstrations now forming such important features of these gatherings, is apparent in every portion of our country where photography is practiced. The average photographer has awakened to an appreciation of the fact that not all the photographic knowledge of the universe centers in his own studio, but that other members of his craft have skill and ability as well as he, and that by mingling with his fellow-workers and keeping in touch with the results of their labors he may gain much of material benefit, and that without disadvantage to himself.

"It is sometimes said that one cannot afford the time and expenditure necessary to attend conventions, but I believe that a careful study of the history of portrait photography in this country will clearly show that it is a false economy which keeps the photographer away from conventions, and, that, with very rare exceptions, the man who rises in our profession, whose work is universally recognized as being good and becoming better, and who consequently is enabled to increase the prices of his output and obtain better returns for his labor is he who regularly attends and interests himself in conventions.

"In closing, therefore, I would say that as our progress has been, in my opinion, more marked during the last few years than in any similar period of our history preceding, it is, I believe, largely because of combined effort and intelligent work based upon the results of others as well as upon our own individual skill, and I would pay a hearty tribute of appreciation to those of our fellow-workers who in the past have given lavishly of their time, their experience and their means towards the organized promotion and advancement of out art science. May we as photographers give our continued and sturdy support to State and National associations, that the progress of our profession may be continuous, and that we, each and all, with the world at large in which we live may reap increasing benefits from the development of our business in the time to come."

President Stein: "Before hearing the next speaker, I wish to make some announcements. There will be a demonstration of the McDonough Process in Color Photography commencing at 3 o'clock this afternoon. Try to be on hand sharp at that hour. The Committee of Arrangements wish me to say that there will be a tally-ho ride for the ladies to show them the town to-morrow morning at 9 o'clock; they will gather on Jefferson Street side of the Pfister House. Remember, it is only the ladies! (Laughter.)

"I now take pleasure in introducing Professor O. W. Beck, Curator of the Fine Arts Academy of Cincinnati, O., who will deliver a lecture on the subject, 'What are the Principles of Beauty in Art?'"

[Because of the difficulty of making it intelligible without the numerous illustrations accompanying it, it is considered impracticable to give a verbatim report, but the following is an abstract of the main points covered by the lecturer.—Editors.]

"Synopsis of Lecture by Professor O. W. Beck.

"What are the principles of Beauty in Art?"

Mr. Beck's lecture was illustrated by twenty reproductions of modern pictures, most of which represented the work of members of the Association, but the authors of which were not named for obvious reasons. There were also a few diagrams to illustrate technical points in composition; but these were so drawn that they directly elucidated the structure of the pictures themselves. His discourse not only adhered to the subtle subject he had to deal with, but was, in fact, a criticism of the work before the convention, pointing out the merits and demerits of it in such a way as to lay bare to the photographers present the reasons for the criticisms advanced. The promising, healthy tendencies found in the convention exhibits he drew attention to, and explained and encouraged, but at the same time he did not refrain from severely criticizing inartistic methods. For instance, the intensely black backgrounds were taken to task for the destruction of the atmospheric quality, and for dragging realistic art over into decorative art. A number of photographs were pointed out as having such density and force in the preponderating mass of black in the background as to fairly throw the figure out of its picture frame.

"Professor Beck in his lecture made a distinction between 'camera buyers' and 'artists,' and urged his hearers to put such a distance between the mere picture taker and the man who puts his soul into his work that there will be no confusion between them. Feeling, he said, was the most precious thing in art, and when logic, reason and fact are combined with it, the result is the language of true art with which a man with nobleness expresses himself. Beauty in art lies in the treatment of the subject. Rembrandt's etchings of the Amsterdam beggars, perhaps the most loathsome people on earth, was beautiful, while the work of some botching photographer in picturing the most beautiful woman on earth is not beautiful. The beauty of art lies in the treatment revealing the thoughts of the artist. It is false to say that a beautiful face or form insures a successful picture, but true success lies in putting on paper something the artist has conceived. It is not enough to reproduce nature as it actually is. Truth does not lie in simply duplicating the appearances of fact. If we get nature only as it is, we would be scientists, and there is no emotion nor beauty in science.

"The speaker then pointed out several pictures which he had placed before his hearers to illustrate his point. The first was that of an old and unattractive woman pouring slops into a barrel in a backyard. There was nothing in the facts as portrayed which was beautiful—old barrels, backyard scrap pile, etc.—but the soul of the artist was what made a picture beautiful. Millet had dignified labor by his wonderful productions. The picture must make us love something which the maker of the picture loved."

TOO MUCH IN IT.

"Professor Beck then criticised the picture because it was crowded full of objects all of which clamor for the attention. The result is chaotic, while in Millet's pictures there is a oneness of impression which lasts. It leaves room for suggestions which have a world of meaning. The crowded picture is to an ideal picture as a newspaper is to a literary gem. One is crowded full of life of all kinds and clamors for the momentary attention of the reader, while the other centers attraction to one phase of life and leaves room for the reader to fill in much of the surroundings. One is thrown aside when read, the other is kept forever in mind.

"In the higher forms of art there is a decorative element, in the lower phases only an exact reproduction of nature. By a simple extension of one main line in a Japanese print the speaker showed how the entire effect of the picture was spoiled, the attention of the eye being detracted from its central thought. Lines, he said, point like fingers and have the power to direct the attention.

"Professor Beck then distinguished between the class of portrait which is based on the principle of variety and that which is based on repetition. He showed how one is art, the other science; one a picture, the other mere geometry. He showed how spaces should be arranged that there would be no unbending sameness in the picture, and warned the photographers not to allow that error to creep into their work of accenting regularity. 'That is the dead side of art,' he said; 'get rid of it. Do not make your picture a cage or a stage in which the subjects are confined or are balancing themselves.' He showed how the attention should be attracted to the subject of the picture and not to the picture itself. The subject should be at repose and not seem to be forced out into view. It should be steady and firm in the frame."

DARK BACKGROUNDS.

"He then turned the attention of his hearers to the effects of light and darkness, warning them against too dark backgrounds which force the foreground out of place. He showed how the attention is attracted to the light spots, and criticised some pictures because the attention was thus attracted to unimportant portion of the picture, the sleeve, for instance, instead of the face, and how the frame or the mounting of a picture can be made to detract from or assist in centering the attention to the real subject. Black, he said, is unatmospheric and cannot be used in realistic art. The great masters use half tones; lights playing through dark backgrounds.

"In regard to making pictures of children, the speaker stated that children seem to need a lot of room, there should be no feeling of crowding a child's picture into a small space. In speaking of lights in a picture Professor Beck said that the eyes could not see two things at once and therefore there should not be two centers of attention, but that if it were necessary to have more than one, let there be three, so that the attention would be held to the central one of the three. Thus he emphasized the necessity of balancing the lights of a portrait so that the center of attention would be the face of the subject.

"As Professor Beck himself stated, he had congested into one hour lessons which can only be learned thoroughly in an art life of three or four years, but he hoped that his hearers would get some profit and be able to make more artistic photographs as a result of his lecture."

President Stein asked attention for a few minutes to hear an announcement by Mr. H. S. Klein, the President of the Milwaukee State Association, of Milwaukee, who said:

"I will not detain you long. It is a pleasure to have the opportunity to greet you here in the name of the Wisconsin Photographers' Association. If it was not for the late hour I would be delighted to speak to you more at length, for my heart is just filled with greeting, but feeling does not set well upon an empty stomach, so I will be brief. This evening entertainment is provided in the shape of a performance at the Davidson Theatre, entitled 'The Highest Bidder,' which is tendered by the Wisconsin State Photographers' Association. No tickets of admission will be given out, as the entire house has been reserved for all those who wear the button which admits you here to this convention; do not fail, therefore, to come early, as there are no privilegd seats; all are equally reserved for you all; come with your wives, your sisters and your aunts; and if you have not a wife along, bring some other fellow's wife or sister; there are plenty of them here; we want to fill the entire house; and we want you all to come; anything our Association can do to make you comfortable we will do while you are here; we are at your service. We have established headquarters at the end of this hall, and there you are welcome at all times to any information we can give you, or anything else we can do for your comfort."

On motion, adjourned.

In the afternoon at 3 o'clock the Convention witnessed a demonstration of the McDonough Process of Color Photography and were shown a large number of colored views by the aid of the lantern. Much interest was manifested in this demonstration, an abstract of which will be found in the September issue.

SECOND DAY'S PROCEEDINGS.

The Convention met pursuant to adjournment, and was called to order at 10.20 A. M. by President Stein, who announced that the first business in order would be the reading of communications.

The Secretary read a communication from Mr. Jex Bardwell, of Detroit, Mich.:

" S. L. STEIN, *President Photographers' Association of America :*

" MY DEAR SIR,—I am sorry I cannot be with you next week. My best wishes for the success of the Convention, and I am sure the Milwaukee folks will try their best to make your visit to their city a pleasant remembrance. Our photographic friends who may be with you I am sure will profit much by the Convention. An old man's advice to young photographers is to visit every photographic convention within his reach. Read everything photographic that he can get hold of, remembering that in every bushel of chaff he may find a few grains of wheat. There never was a time that required so careful a watch to keep in touch with the fads and changes that occur in photographic practice, and nowhere can these changes be learned and observed as at our photographic meetings. You can learn of these changes at our City Camera Club meetings; I was at one the other evening, and I saw some of the members gazing at a new frame that had been recently hung. I should have passed it by had not one of the members said to me, 'Is not that splendid?' I then moved a little closer, but the member said, 'Don't go too close; it may look a little fuzzy, but as soon as you can make out the intent of the photographer then you will see its beauty. That is art, my dear fellow.'

" Just then a friend met me and asked if I would be in my room to-morrow morning, for he wished to show me a new lens he had got. It cost a deal of money, but it was warranted to him to cut sharper and to give better 'diffusation' than any other maker's lens on the market. I cast a last glance at the art photograph and pondered muchly.

" And now, President Stein and the members of the Convention, receive my best wishes for the success of the Convention and for the satisfaction and photographic profit that may accrue to you.

" Yours fraternally,
" JEX BARDWELL, of Detroit.

" JULY 23, 1900."

Secretary Nussbaumer read the Treasurer's report, which, as stated by the Chair, had been considered at the last meeting of the Executive Board and approved by that body.

On motion the same was now approved as read.

Secretary Nussbaumer read the report of the Secretary for 1899, respecting which the Chair made the same statement, and, on motion, the same was approved as read.

President Stein: " The next assignment on our programme was to have been an address by B. J. Falk, of New York, on the subject, 'The Copyright Question of To-day.' Mr. Falk, however, is not here, but has forwarded a communication on this subject from G. E. Waldo, counsel for the Photographers' Copyright League, which I have asked the Secretary to read. Please pay close attention to it, as this is a matter of vital importance to us."

The Secretary read the following:

The Photographers' Association of America :

Gentlemen: " A matter of the utmost importance to the photographers in this country is the proper protection of the results of their labors by Copyright Law.

" The first protection of photographers by copyright was under the Act of 1865. Since that time there have been various amendments, but none making any very material change in the original law.

" The course of decisions by the courts since the passage of the Act of 1865 has tended to restrict more and more the remedy of the photographer against the infringer of his copyright, until to-day the supposed rights of photographers have, through judicial construction, so faded away as to leave, in most instances, no remedy against the publisher who has seized the fruits of the photographers' labor.

" The Photographers' Copyright League of America has been, for several years, urging such amendments of the Copyright Law as would furnish some rightful measure of protection for photographic copyright.

" The present law provides that the infringer shall forfeit all the plates on which the infringing articles have been copied and every sheet of the infringing article, and 'Shall further forfeit $1 for every sheet of the same found in his possession, either printed, copied, published, imported or exposed for sale.' By the Amendment of 1897 it was provided that in the case of a photograph made from an object not a work of fine art, the sum to be recovered in one action should be not less than $100 nor more than $5,000, and, in case of a photograph of a work of fine art, not less than $250 and not more than $10,000.

"The statute further provides that an action for the infringement of a copyright must be brought within two years of the date of such infringement. Until within a few years the courts have held that proof that the copies of the infringement were in the possession of the infringer at any time within two years prior to the commencement of the action was a sufficient finding in possession under the statute.

"Of late years, especially since the use of reproductions from photographs as illustrations in the magazines and newspapers has grown to such enormous proportions, there has been a constant tendency to restrict the methods of proof as to copies of infringements found in the possession of the infringer.

"In the case of Backus *vs.* Gould, decided in 1849, it was held that the penalty could only be recovered for the sheets found in the possession of the infringer. The testimony of an employee or other person as to the number of copies in the possession of the infringer, was held to be sufficient until the decision by Judge Lacombe, United States Circuit Judge for the Southern District of New York, in Bolles *vs.* Outing, that such proof could only be made by the plaintiff or his agent who had seen the infringing copies in the possession of the defendant, or by seizure of United States Marshal. This rule was upheld by the Circuit Court of Appeals. On appeal to the United States Supreme Court this decision was upheld, with some intimation that the finding must be by United States Marshal on a writ for the seizure of the infringing copies, although it was apparently the opinion, both of the Circuit Court of Appeals and the Supreme Court, that the causes of action—the one for the seizure and forfeiture of the infringing copies and plates upon which they were made, and the other for the penalty for the number of sheets seized—might be brought in one suit. These decisions made it almost impossible for photographers to recover any penalty whatever for the wrongful use of their photographs by publishers of newspapers and periodicals, for the reason that the whole edition is sold and already in circulation before the unfortunate owner of the photograph discovers that his property has been taken without his knowledge or consent.

"Since then, however, the United States Circuit Court for the Eastern District of Pennsylvania has gone even further in its strict construction of the law. In the case of Falk *vs.* Curtis Publishing Company, decided October, 1899, the agent of the plaintiff bought from the infringer one copy of the infringing magazine; suit was commenced for forfeiture and penalties, and there were served at the same time upon the defendant two writs—one of replevin for the infringing sheets, and the other a summons. The Court held: First, that the purchase of a copy by the agent of the plaintiff prior to the commencement of the action was not a sufficient finding in possession under the statute. That the finding in possession must be by seizure of the copies of the infringement by the United States Marshal under the writ of the Court. Second, that such seizure must be prior to the commencement of the action for penalty, although possibly the two actions might be consolidated as one. Yet, as in this case, the seizure and the service of the summons were simultaneous; there was no finding in possession prior to the commencement of the action. Hence, the plaintiff could not recover anything in that action, but must start another one.

"If this construction is sustained by the United States Supreme Court it will make the Copyright Law practically worthless so far as photographs are concerned.

"It is perfectly apparent that before the photographers could retain a lawyer, have the necessary papers prepared, and put the writ in the hands of the Marshal for seizure of the infringing copies, the copies would already be sold and out of the possession of the infringer.

"The Copyright League, therefore, has been and is seeking to have the law so amended as to make it possible to prove and recover penalties for the actual number of infringing copies which the publisher has made and had in his possession at any time within two years prior to the commencement of the action; and to this end it is of the greatest importance that all the photographers of the United States should join with the League in using every effort, proper means and influence to secure the amendments to the law which are absolutely necessary for the protection of all photographers.

"Believing that it is for the interest of all photographers that this should be done, The Photographers' Copyright League respectfully requests that you join with it in obtaining the protection of photographers' rights.

"Very respectfully yours,
"G. E. WALDO,
"*Counsel for the Photographers Copyright League.*"

President Stein: "You have heard what Mr. Waldo says in this communication. It is vitally important that we take some steps towards assisting the League, and I would like to hear from some of you and to see what you have to say on the subject. Quite a number here are using copyrights right along, and are interested in the matter; and those who are not personally interested at present ought to be on account of the profession at large. I suppose I ought to be as much interested in this copyright business as any one. We have all had cause for complaint in copyrights being stolen. I have lost several suits within the last six months. I know many of you have had occasion to see the necessity of protecting your copyright interests in photographs, etc. I would like to hear from Mr. Schneider on this, who, I think, has had some experience."

Mr. John Schneider: "We have had a great deal of copyrighting ourselves, but I have often thought that there is not a man in the business who does not at some time make a picture, or portrait, or something for which he needs the protection of copyright. Some of us who make a great many of them, after spending a great deal of time and money to produce effects that are artistic and which ought to be of value to us, have found ourselves insufficiently protected. This ought not to be, and of course we are dissatisfied with the condition of affairs at present. At the last session of Congress I believe there was a strong effort made to amend the Copyright Law in such a way as to insure better protection. At present there is no adequate protection afforded for the copyrighting of photographs. I would like to hear from some others. I have some resolutions here I wish to offer, and perhaps the best way would be to read them, as a basis upon which further discussion of this subject can be had. I regret that some of those who are now coming into the room have not heard the very interesting communication just read from Mr. Waldo."

Mr. Schneider then read the following resolutions:

"*Whereas,* Photographs are now the larger means of illustrating the magazines and newspapers of the day, and are in general demand for all illustrative purposes; they are a source of profit to those using them in this way, and for these reasons they are valuable property to the photographer who creates and owns them; and

"*Whereas,* Photographs are by law subject to the protection of copyright; and

"*Whereas,* The recent rulings of the United States Courts on the 'Found in possession' clause (see 4965) of the Copyright Statutes have made it impossible for the photographer to protect his property against willful infringers of his legal rights;

"*Therefore, be it resolved,* That the 'Photographers' Association of America,' in convention assembled, respectfully ask Congress to so amend the Copyright Statutes as to properly protect all copyrighted photographs; and

"*Be it resolved,* That this Association endorse the work done in the past by the Photographers' Copyright League of America, and give them our cordial support in their effort to secure proper laws for the protection of photographers' copyright; and

"*Be it further resolved,* That the Secretary be requested to prepare and forward copies of these resolutions to Congress."

Mr. John Schneider: "I submit these resolutions."

President Stein: "The resolutions are before you, gentlemen. What will you do with them? A motion will be in order."

Mr. Taube: "Mr. President, I move that they be accepted as read. Furthermore, I should like to offer as an amendment that we insert the additional recommendation that all photographers personally acquainted with congressmen should do all they can to influence their congressmen to put this matter properly before Congress, and secure the necessary action by that body."

Motion seconded by Mr. F. W. Guerin.

A member present having objected to the proposed amendment, and desiring the motion to be simply on the adoption as read, Mr. Taube withdrew his amendment, and the question being put to vote the resolutions were adopted as read.

President Stein: "I would like to have every one of you bear in mind the suggestion which Mr. Taube made, however, and notify your congressmen, and request them to assist in this matter. There is no telling when any one of you may wish to take out a copyright, and will need to be protected."

Mr. C. R. Reeves: "Wouldn't it be well for the Association to publish copies of this resolution, and supply members that they may study it and send copies to their congressmen? We would have to specially go after each congressman if we want anything done. Simply sending a copy of these resolutions to the two Houses of Congress, there to be referred to their Committee, would, perhaps, not do the same good as if we made a personal effort with each congressman. To me, the impor-

Photograph by FALK.

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tance of this appears very great. I think we should say to our congressmen that if they expect our support they will have to assist us; I therefore present as a motion, that this Association print and distribute copies of the resolution for such purpose."

Motion seconded.

Mr. Schneider: "Less than two years ago this question was before Congress, and the Copyright League were represented there, and were doing all they possibly could to advance the interests of those who desired protection for copyrights. At that time the Baker Art Gallery wrote to every congressman in Ohio, soliciting their personal influence, both of our senators and representatives, and the great majority of congressmen agreed that if the question came up and was brought before them, they would give it their consideration. Personal interviews were had at that time, and I think such interviews with congressmen may be of great benefit. We all understand first of all, that the element that is fighting us in this is most powerful—the newspapers and magazines of to-day, who are the most powerful enemies that we have to fight. We will have to put forth all our efforts, and even then it is a question whether we will come out on top when this matter is finally settled. You can readily see the importance of this to the magazines and newspapers, and what a great struggle they will make to destroy this copyright protection, even the little which we now have."

President Stein: "It has been moved and seconded that the Association print copies of these resolutions that have been adopted and send the same to the members of the Association, who are to furnish their congressmen with copies of it. Are you ready for the question?"

There being no further remarks the vote was taken and carried in the affirmative.

President Stein: "The Secretary will give the matter his attention, and see that copies are sent to each member of the Association, and also to the different photographic journals and papers.

"The next business in order is the appointment of committee on nominations. I will appoint as such committee the following, viz.: Dudley Hoyt, Rochester; F. W. Guerin, St. Louis; Frank Schumacher, Los Angeles; W. H. Moses, New Orleans; George Varney, Chicago. This committee will bring in their report to-morrow morning, which is the time assigned on the programme for nomination of officers. If any member has anything to offer now for the good of the Association, he will be accorded the floor; if not, we will call on Professor A. H. Griffith to give us his lecture." (Applause.)

Professor Griffith, now coming forward, President Stein was about to introduce him as soon as the applause would subside.

President Stein: "I dont think it would be necessary to introduce him, would it?"

To this there was a chorus of voices in reply, "No! Don't!" Professor Griffith then addressed the Convention as follows:

Address by Professor A. H. Griffith, of Detroit.

"Mr. Chairman and Officers, Ladies and Gentlemen: It is with a great deal of pleasure that I meet and greet you to-day. Yesterday, feeling that the keynote of that which you are most interested in and would most like to hear spoken of would be in your President's address, I requested by telegraph of a gentleman in Milwaukee to send me his points, so that I had those all before I left Detroit on last evening. This morning in the papers I picked up I found a good account, showing that the newspapers were giving some space to the things that interested you here. This, of course, has given me in a way something of the line of thought which I am to take up with you. You have all heard me many times, and if I repeat some things which I have said before I hope that they may not come in in just exactly the same way, in just exactly the same manner. We live and learn, and it is the progress of a nation and of an individual that makes life worth striving for. I find men who gather up pictures and come to conventions feeling that they are going to sweep the whole thing before them; and after they come here and take a look at your exhibition, they wish their pictures were at home. Now, in the past I have tried in a way crude and abrupt sometimes it was, and in such a manner that you rather opposed it—I tried to bump you, as it were, out of the ruts, and once in a while I have pushed you clear over to the other side of the road, and you have been just as bad there as you were in the former place. Now you are drifting back to the middle ground, to the safe, sure ground. The difficulty is that you are not true to yourselves; you do not think out a policy, you do not think out a plan, you do not work up to a certain idea which is independent, which is true to yourselves. But you read now more than you used to, and I thank God for it; an ignorant photographer has no business in business (applause). You look more than you used to; you use your eyes and look at other men's work; you look at paintings; you look at pictures; you look at people; you study their faces, you study their pose, their walk, their character and all their characteristics, and all that is valuable to you; it enters into your work. Once, as I have often said, you would let men and women come into your studio, your 'operating room'—and I wish you would not use that word 'operating'; it is a damnable word for a photographer to use (applause); why, they operate on you when they take you to a hospital to cut off your leg (laughter); do you want people to have that sort of feeling when they are going to your office as an amputating, as an 'operating' room? Why, that idea at once puts a wrong impression into a man's mind, and stamps its reflex upon his face. Call it your studio, call it a work room, call it anything under heavens but an 'operating' room. The first thing when a patron comes into your studio, into your reception room, is to make him or her feel at home, make them feel in good humor; you must have them in a good humor to get the best there is in them into the picture, whether they be man, woman or child. Let them constantly feel that they are among friends, and with friends; every day you see pictures of people that tell you nothing as to whether those people have a heart or soul; they are without expression; you don't know whether here is the picture of a man who is a banker, or a pawnbroker; whether he has the slightest iota of human sympathy in his makeup. You must reflect character in your pictures, and you must draw the true character forth from the patron if you want it in the picture. Now, if when a man comes into your waiting-room you approach him first on a matter of money—Oh, dear, we all have to live for money, we have to work for money, we have to make our living; some people think it is a grab game, and if you don't grab your share you will not get any. The man comes into your room; we will say he expects to pay five dollars for a dozen photographs, and you instantly commence on the financial side of your business, and you tell him the price is eight dollars. At once there is a shade of disappointment in his face, and it never leaves that face till he gets out of your gallery, and it is in that photograph! (Applause.)

"Now and then I get to look at a lot of photographs, and I give the makers of them a talk, and in the place of talking all technique, I give them a talk on phrenology, on faceology, if you wish to call it such; because there is nothing else to talk about. I find now and then a collection of pictures in which there are no great things; they are all ordinary, and I can only talk faces then; and I do it because I feel that I ought to impress you with this idea, that there is in every man and woman something of the divine, if you can only bring it out. You must reach them from the side of their human feeling; talk to the farmer of his crops; talk to the Nebraskan of his corn; talk to the Southerner of his cotton; talk to the man from Chicago of pork! (Applause). If you can talk to any man about that in which he is interested you will immediately see his face lighten up, and then is your time to take him at his best. I want the soul of the people whom I love, to come out in their pictures. You are getting past the age of purely mechanical achievement; the photographer is stepping outside and beyond the mechanical; you are becoming artists, because you are reading and looking, and because you are no longer copying. Be yourselves; see what other men and women are doing, but then do something yourself; that is what will make an artist of you, photographers. The day is gone by when you can retouch, and iron out all a man's character; you now leave a little of it in; and you will gradually only touch out the imperfections and leave all of the soul of the man there. So that when another takes up that photograph he will at once know whether the subject of it was a banker, or a manufacturer, or whether he was a grocery-keeper, or a pawnbroker; whether he sells over the counter, or takes in money, or whether he is a philanthropist, or an artist; he will know it instantly. I don't say that every one cannot read faces; why, the merchant with whom you deal makes up his mind instantly whether he will trust you or not from your face; he is always reading faces unconsciously; and so with people who come into your gallery, you know intuitively whether you want to take their pictures or not. One man loves children; there is at once a bond of sympathy between all children and that man, so that he gets out of them the very best that is in them; and so he makes marvelous children's pictures. Another man makes pictures of young ladies of fashion, of women who dress because they are pleased with it, and wish to please their friends, women who pose before the world as the leaders in social life; and the photographers who best succeed with them are those who can best draw them out from that side; and again we find the photographer who makes old men's heads, and makes them marvelously well, wonderful works, so that you see the character that their sixty, seventy, or eighty years of life that has gone past has written on the faces of those men or women. You may think that you make your face, and you do; God makes our bodies, but it is what you live that comes out in the face, in the character, in the walk. I said of Bryan, whom I saw at Lincoln, when he walked out of that hall, that he was a stubborn man—I am not talking politics!—I am talking about men!—because he put down those big feet flat; that is all I wanted to know of him. (Laughter.) You people who think, and are honest in your Democracy, that you can lead that man will find out he will lead you! He is built like the Irishman's fighting cock, 'with his two fate on the ground, and all the devils can't trick him.' That stubbornness may be a good, and may be a bad characteristic. Every man's character is brought right out in his makeup. It is the studying of this character indication, together with thorough familiarity with all the laws of manipulation of the materials with which you have to deal mechanically which will make successful photographers. A few years ago everybody was making Madonnas; there wasn't a single exhibition at which there were not a lot of Madonnas, that Mother of the Christ; and what a host of sacrilegious women they were, beautiful but without soul; and I condemned you for it; I told you to leave Madonnas alone; that there was only one woman in a million who could pose for a Madonna, and you could not live with her. (Laughter.) A Madonna would be a woman who was so far above you and all the world, secure in her own place both here and in Heaven, because she was mother of the King of the world, that no power, surely no human power, could live in the same house with her; and you stopped making Madonnas then, and you began to make old men's heads and old women's heads; and every old man and old woman in the whole country was drawn out and filled up your exhibition. And I am glad of it, because it gave another phase of character; but now, as I take a glance at your exhibition I find young men and young women, children, middle-aged and old-aged people; and I find that you are on territory that you can handle, on territory that you understand, on territory that you know. Yesterday your President said, 'Don't follow fads'; be honest with yourself, is what I mean. Some man makes a misty, dreamy picture, like George Innis, of an evening landscape, and puts into it all the poetry of the dying day, all the mystery of that hour between daylight and darkness, when everything is indistinct and gloomy and full of haze: George Innis could do that. But because you people go out and take a smudgy, fussy, cottony looking picture, don't think that you have made an Innis; you have not done it; you cannot put the soul into it; and it is the soul that makes the picture. Now I don't care whether a painter uses a brush, or his fingers, or a pallet knife; what I want is the result; and I don't care if you make your pictures sharp, so long as you don't cut the picture out of the background, or I don't care if you give it to me as soft as nature meant to make it under certain conditions, only give me a picture of the friend whose friendship I prize, of the woman whose love I would I die for, of the father I honor and respect, of the mother whom I love. Don't take out a single wrinkle that you can leave there; every wrinkle is hallowed by the sixty or seventy years of trial and tribulation in fighting the battle of life; and they are all honorable scars; every one is a crown of glory to that old head and that old face; don't take them out! Make youth as symmetrical, as beautifully round as you may, make it full of happy ambition, of love and affection, full of the joyousness of young life, the gladness of living; make childhood with no care, with nothing but indifference to all about them of pain or evil, in unconscious abandon of innocence; but let old age show evidence of having fought the good fight and kept the faith, reaching out with confidence to the life to come. Put into it all the serenity of a nature at peace with itself.

"But now every once in a while I am told, 'That's all very well to talk of; that's theory; but here comes a man that wants his picture taken and we want his money, and we have to take him.' I have said to you again and again, never let $2 get out of your place if you can keep it in; rent comes due promptly, the stock dealer comes around for his money; never allow a dollar to get out of your place that you can keep in it; but if you set your price at $1 you will be a dollar man. Raise your standard high and bring your patrons up to it, and all your people; make your pictures tell their story, and then there will be no trouble about price. People in this country are waking up to the fact that we are leaving the days of rag carpets and bare walls; they want the best, and they are willing to pay for it; and they only know the best as you make the standard for them; if you make cheap pictures in your territory the people will know nothing but cheap pictures, and they will only pay a cheap price. You can make a class of good pictures, and even if they don't always meet the highest ideal towards which you are constantly striving, you can demand a price within reason, and get it; and that is far better. Await your opportunity to make *great* pictures; make good pictures all the time; and now and then, when some face comes into your gallery that you find is ample for use in any direction that you want, that you can mold like sand, that is your opportunity. Actors walk the boards for $10 or $12 a week for years, doing good work, excellent work, awaiting their opportunity when the star may be sick, or incapacitated for any cause, and then step into his shoes, into his reputation, and then they are no longer cheap men. Just so await your opportunity; it comes to every man. There is a tide in the affairs of men, which, taken at the flood leads on to fortune; grasped at the right moment it will mean success; and success means money and fame. Press and magazine writers have toiled with their pens for years, using their best energies in the struggle, until suddenly they sprang into prominence and position; why? Because they seized the opportunity as it presented itself. A young man writing for one of the London papers at $8 a week, was sent to France to report a reception given by the Emperor and Empress of France to Queen Victoria and Prince Albert. He was an unknown man, simply paid a salary of $8 a week and his expenses; he crossed the channel, secured a ticket into that great reception and banquet given for the sovereigns of England; and then he kept his eyes open; and he watched the table, every movement, every pose; he noticed that when Prince Albert and Queen Victoria sat down to table they sat down like monarchs, knowing that there was a chair placed behind them by the servant; when the Emperor, Napoleon III., sat down and the Empress Eugenie, both looked back to see if there was a seat for them, showing that they had come out of the people, a trait of character; and he wrote it up; and there came a check to him and a letter saying that his salary was increased to $25 a week, and a position secured him for ten years if he wanted it; simply because he caught something of the people's character, because he was observant, and could see things and tell about them. Now, there is an opportunity for all you people; grasp the thoughts and ideas that are presented to you; take hold of the idea instantly as it suggests itself; it will never come to you unless you are ready to see it as it comes within range. Visit every picture gallery, study every painting that comes within your vision; there is no doubt but that at any moment some one will come in that will afford the opportunity for you to make your fortune and your reputation, but you must be ready. I don't know how long I am to talk." (Cries, "Go on.")

President Stein: "You are not limited."

Professor Griffith: "But I don't want to tire you. It was twenty minutes before eleven when I began, by the Milwaukee time. (A voice: 'Never mind, we don't have dinner until 2 o'clock.') I can stand it if you can a little longer. (A voice: 'Go ahead.') Your President spoke of many good points; he gave you many good ideas on the business side, as well as the art side. He spoke of the people whom you would meet; he spoke of how to handle those people. I think most of you neglect the financial side; most of you fail to see where the dollars and cents come in; most of you fail on the score of feeling that that is good enough; there never was anything good enough. Millet, when he painted his picture which set the world on fire, those potato gatherers waiting in the growing twilight for the bells of the angelus to ring across the fields, said, 'Oh! If I might only have that picture again to paint it over!' And yet it sold for $115,000, and you could carry it under your arm! Now, you must never be satisfied with what you have done. Satisfy your people, always; do everything that is possible to please and take care of your picture and your customers; but within yourself set your ideal so high above all that you have already done that you in striving to reach it are bound to win the praise of others, and to deserve it. Study your people, if possible, when they come in; don't take them out and seat them at once for a picture. I remember of that remark by an artist of the old time methods when he said that when he went to have a photograph taken it gave him the 'shivers,' because they always seated him in a chair and clamped two cold clammy things up to the sides of his head, and it made him shiver through and through! That is not necessary to-day; you can catch the expression of your sitters without doing that; you can avoid giving them the 'shivers,' and catch them as they come; but first you must understand them. You meet people and you don't like them at first; you say, 'I don't like that man.' By and by you learn to know him better, and you do like him; and usually those are the firmest friendships that begin just that way. Try to take your sitters and get in touch with them. Let me tell you of two young men who both clerked in the same store; both were of equal intelligence, bright in looks and well dressed. One Saturday night they both started out from Cincinnati to a country place to spend Sunday and come back on Monday. Charley was cold-blooded and calculating; and while he met people, and they were free with him, genial and pleasant and cordial, yet Harry saw everybody and talked with everybody; so next Monday the two came back to their accustomed routine, and the following Tuesday the old farmer whom they had visited came into the store. Harry at once went up to him, with a 'How d'ye do; how is your wife and the young man we met at dinner—I cannot call his name now, etc.' He at once put himself in touch with the old man. The result was that that farmer would ever after pass by Charley with a civil 'How do you do?' but he always had Harry to wait on him, and Charley never could understand why the old man didn't take to him. There are a good many of you people who are too busy to take care of your customers. I heard a story out West while I was gone away of a certain man going into a gallery out there, and the proprietor was too busy to see him. The lady in the reception room took in word that a gentleman was in waiting, and returned with the message that the proprietor was too busy to see the gentleman then. The caller went out and never came back. That is the greatest blunder in the world. Lord Essex, of England, became Lord Chancellor by taking the cloak off his back and spreading it in the mud so that Queen Elizabeth might step from the carriage to the curb with her feet unsoiled. That was an act of courtesy that has gone down into history, and his name has gone with it. Little things that you do in your galleries, in your studios, not in your 'operating' room—(laughter)—in your workshop, are the things that make you friends; they are the things that count. It is the dollars that you don't see that come into your pocket by and by. Treat all your people as though they were the only customers you had. Make them feel at once that everything depends on their patronage, and not that you simply bring them out, and take them before the camera, take out the bung, and take their picture, and tell them to come to-morrow for it—(the speaker here accompanied his words with a pantomime that brought down the house)—or day after to-morrow, as some of my audience suggests, and then give them anything you have got, and make them take it and make them feel that it is the best. Be lavish with your plates and stingy with your paper; that is, don't be afraid to use enough plates to secure a good negative; then be stingy enough with your paper to print only from the best negatives you can secure. But by all means get in touch with the people; make them feel that their interest is yours, and that you wish to make pictures of them that will speak, that are the best that can be made. Make up your mind that you will be the best photographer in your city, that you are going to lead, that you are going to demand and obtain the best prices for the best work. Be honest with yourself; demand of yourself the best that is in you; measure the work of other people at its true value, and give to the people an equal value always—or better! I thank you." (Applause.) The applause continuing, the speaker continued. "I cannot tell you how much I appreciate the applause you have given me. A sermon an hour long is a very long one, you know, and an hour and ten minutes is still worse. I was born and raised a Quaker on one side of the house and a Presbyterian on the other. If any of you have ever gone through such an ordeal in your childhood you will appreciate the situation. (Laughter.) To make it worse, I lived most of my younger days part of the time with one grandfather and part of the time with the other; when I was with my Presbyterian grandparent we went to church at 10 o'clock Sunday morning, and the old people came at 11 and brought us lunch, and we stayed until 2. We never read anything but 'Pilgrim's Progress' and books of that kind—'Baxter's Saints' Rest,' etc. Sunday was a day we dreaded. There I was taught to say 'Yes, sir,' 'No, sir,' and 'Mrs.' and 'Mr.' I would stay there four or five months, and then I would go to my Quaker grandparents, and when I would say, 'Mister So-and-So,' I was told I must not say that; say 'Isaac' or 'Mary.' 'Thee must not use anything but plain language.' If I sat at table and they asked me anything, and offered me food, and I said, 'Thank you,' they would tell me, 'Thank nobody but the Lord!' (Laughter.) We went to church on Sunday into a room as bare of all kind of ornament as the back of your hand; not a picture, not a decoration of any sort, because that would be sacrilege; and, worst of all, the women and girls went down one side and the men and boys on the other; and there we sat two whole hours at a stretch waiting for the spirit to move somebody to say something! And then we all got up and filed meekly out; and the birds never sang so sweetly and the trees never looked so green, and the sky never looked so blue, and I swore by the Eternal that if ever I got big enough to be my own master I would never go to church. (Laughter.)

"Now, I thank God. I do go sometimes when there is good preaching and good music; but I lack manners because I don't know which is right to say, 'Yes, sir,' and 'No, sir,' or to thank you, or sometimes to do the right thing in the right place. To-morrow, or Friday, I believe, I am down again, and then I will try and do the right thing in the right place." (Applause.)

President Stein: "I want to make an announcement that this afternoon, at 3 o'clock, we are to meet at the Layton Art Gallery, which is just one block north of the Pfister Hotel; the Curator of the Art Gallery, Professor Edwin C. Eldridge, will lecture on the works of art, some of them most renowned, great masterpieces, and I think it will be rather a treat for you to be there. This evening we will attend a concert at the Deutscher Club, which is at the head of Grand Avenue. Your buttons will admit you." (Applause.)

On motion, adjourned until 10 A. M., Thursday.

VISIT TO LAYTON'S ART GALLERY, WEDNESDAY AFTERNOON.

"Lecture on Art Works in the Gallery, by Professor E. C. Eldridge."

The especial feature of Wednesday afternoon's program was the visit to Layton's Art Gallery, where the members of the Association were received by Professor E. C. Eldridge in a charmingly informal manner, and conducted through the celebrated gallery. Professor Eldridge explained that he preferred to accompany his guests from room to room, and to, in a way, chat with them while he lent them his eyes to view the various treasures of the collection as they would be looked upon by one who was familiar with and loved them. After giving a brief history of the building and its treasures, Professor Eldridge spoke of the several more important pictures in detail and with great interest.

Referring to the masterpiece of Alma-Tadema, called "A Roman Art Lover," Professor Eldridge said:

"It is in reality an ideal restoration of a Roman palace in the time of the emperors, and as such it gives one a good idea of the architecture, costumes and manners of the ancient Romans," and, continuing, pointed out the different excellencies of the picture in detail. He said, "this picture reminds me forcibly of the intimate relation existing between painting and photography. Photography has greatly aided painting, which it never can, of course, supplant. The reason why a painter likes a good photograph is because it is nature reproduced. Previous to making any ideal creations of his own he must inform himself thoroughly upon the subject of which he treats; and in his study of nature photography has been of most powerful assistance. This is particularly true as to the study of animals in action. You are all familiar with the experiments of Mr. Muybridge, who ascertained by photographing a horse running, in consecutive phases, the extent to which the horse projected his foot in the most rapid running." (Mr. Eldridge here reviewed some of the principles of Muybridge's system, and applied it to several of the pictures of running horses in this collection, notably that of Schreyer, entitled "The Wallachian Post Carriza.") "Since the discovery of photography, and particularly since the great advance made by new processes and systems, and the increased facilities through which so many can indulge in the taking of photographs, the study of art, the basis of which is almost entirely a study of nature, has been greatly assisted. No intelligent photographer will expect to do by his art what the real artist painter does with his, but within the limits of his sphere, by the skilful and intelligent management of his camera, and his understanding of the principles of composition, lighting, printing, etc., he will approach the painter in the art side of his work; and if ever color is satisfactorily reproduced by photography, we perhaps will reach the time when the most perfect representations of nature attainable will be at our command. I understand that individuality in photography is as much a feature of good work as it is in the work of the painter; therefore, I hold that there is the greatest and most intimate sympathy between the two."

[Professor Eldridge's remarks were listened to by a large number of interested members, and were greatly enjoyed—having, however, such intimate relationship to the pictures themselves it is impossible to do more than indicate their nature as above.—EDITORS.]

THIRD DAY'S PROCEEDINGS.

The convention met pursuant to adjournment and was called to order by President Stein at 10.30, who announced that as he understood there were no committees ready to report at that time, the first thing in order would be the selection of place of holding the next convention.

The secretary then read the following communications:

(Letter.)

"HOTEL VICTORY,
PUT-IN-BAY, OHIO.

"J. GEORGE NUSSBAUMER,
"*Sec'y, P. A. of A., Milwaukee.*

"Dear Sir:

"Hotel Victory, Put-in-Bay Island, Lake Erie, hereby extends a cordial invitation to your association to hold its next convention at Put-in-Bay Island. We have a finely appointed hotel capable of accommodating 1,200 guests. We have room to display all of your exhibits and for manufacturers' display, a large hall for official meetings, and some smaller rooms for the use of committee meetings, etc. All of this space we offer free.

"We will make you a rate of from $2.00 to $4.50 per day, according to location of room.

"We have a fine orchestra, which is at your disposal. Hotel Victory is situated on a headland, two hundred feet above the lake level, amidst some of the finest scenery that can be found along the lakes. We have private bathing beach, golf links and many other forms of recreation.

"Believing that we can offer you better advantages than can be found elsewhere, we submit this to your body with the hope that it receive favorable consideration. I am,

"Very truly yours,
"T. W. McCreary,
"*Manager, Hotel Victory.*"

(Telegram.)

"San Francisco, Cal., July 24, 1900.

"J. George Nussbaumer,
"*Sec'y, P. A. of A.:*

"The Pacific Coast Photo Dealers' Association extends an earnest invitation to the Photographers' Association of America to hold their next annual convention in San Francisco. A hearty welcome, a fine climate, sparkling wines, and good cheer assured.

"Geo. H. Hahn, *President.*
"L. D. Hicks, *Secretary.*"

(Also telegram.)

"Toronto, Ontario, July 25, 1900.

"S. L. Stein,
"*President, P. A. of A., Milwaukee:*

"Commissioner of Customs says exhibits for Photographic Convention can be displayed under warehouse entry without duty the same as in the case of other exhibitions. Toronto will be pleased to have the Convention for next year.

"E. A. MacDonald, *Mayor.*"

(Telegram.)

"Detroit, Mich., July 25, 1900.

"S. L. Stein,
"*President, P. A. of A., Milwaukee:*

"The City of Detroit joins heartily with the local members of your Association in an invitation to hold your next annual meeting in Detroit.

"W. C. Maybury, *Mayor.*"

(Telegram.)

"Detroit, Mich., July 25, 1900.

"S. L. Stein,
"*President, P. A. of A., Milwaukee:*

"Detroit Chamber of Commerce and Conventional League, at a special meeting called to-day, unanimously voted to extend to the National Photographers' Association a pressing invitation to hold their next meeting in Detroit, the Convention City of the world. Detroit has a reputation to sustain as a convention city, and this organization promises that the photographers' meeting in 1901 will exceed the expectation of the oldest delegate.

"Walsh, *Secretary.*"

President Stein: "We are ready for nominations as to holding place of next meeting."

Mr. Taube: "Mr. President, I place in nomination the City of Detroit for the next exhibition and meeting of this Association."

The nomination was seconded and stated by the Chair.

Mr. Giffin: "I move that nominations be closed."

President Stein: "Looks like a 'put up job.' (Laughter.) Does that meet with a second?"

(A Voice: "Where is that man from Buffalo?")

Mr. I. Benjamin: "We would like to hear more about Detroit; would not Professor Griffith get up and tell us something?" (Applause.)

Mr. A. H. Griffith: "Gentlemen, three hundred years ago a little band of missionaries and some fishermen came up the St. Lawrence and through the lakes until they finally reached that most magnificent of all inland rivers; and the old chronicles tell us, that, as they glided along by the banks of this wonderfully beautiful river and the islands that have since become historic, that the birds rose and flapped their wings in the morning sunlight, and they said that under nature's canopy they had found no place so beautiful since they had left the sunny land of France. They came on to a little inlet near where our Michigan Central Depot is to-day, and there they found the Indians camped about a rude stone figure which they called their Manitou or god. The Catholics in their zeal of religious fervor felt that this was sacrilege, and they tore down this stone god and broke it into fragments, and scattered it along the shores, and they erected the cross and the white flag of Louis to mark the spot. At midnight the Indians collected along the shores and reverently gathered up each fragment of this great rock god and placed all in their canoes, and carried it up to our Belle Isle, and there implored the god Manitou to turn each fragment into a snake that all might defend the island from the whites forever; and they named the island 'Man-a-sha-bee'—the 'Swan.' That was the beginning of Detroit.

"Two hundred years ago, at this time, in this month, 1901, Cadillac, with a party of Frenchmen, landed at the same place, and built a stockade and forts, and laid out the little City of Detroit. He called it 'Ville de Troit'—the Village of the Strait, or City of the Straits, as we call it to-day. From that has come the name. It had become a nucleus of a city. Here were withstood the sieges of the Indians under Pontiac; and here were undergone all the trials and tribulations of an early colony in the vast Western wilderness, until in 1805 it had spread outside of the stockade; and then, through a great misfortune, as it was then thought, though we now know it to have been a great stroke of luck, the entire city was wiped out by fire. The public citizens of that day, the Governor and Judges, sent to Washington for Le Enfant, the great French engineer, who had laid out Washington City, and he laid out Detroit in the newer and more beautiful way. He gave us the city we have to-day, with its magnificent broad avenues, with its well paved streets (always kept clean), a city which all the people who come to-day to visit it or sojourn in it say is the most beautiful and the most magnificent city in all the world.

"You know, if you went to San Francisco, you would be most elegantly entertained; the great, generous heart of the West opens up to its visitors, and you would be most magnificently taken care of, as I was at San Francisco; but San Francisco is a long way off; if you should go to any one of the other points named you would be grandly taken care of; and as for Milwaukee, what can I say? The treatment here has been most magnificent; you have been taken care of in every way that you could ask for; and I doubt very much whether there is any other city in the world—in the United States, at any rate—that will treat you more grandly than you have been treated here. (Applause.)

"But next year we will celebrate at Detroit the 200th anniversary of the city's birth in this month of July. We have a magnificent waterway, in which a vessel floats as easily as if suspended in mid-air; our water is pure and clean, and beautifully blue; our streets are broad enough for you people to have your own way in them. (Laughter.) You may parade or take the whole sidewalk—the street if you wish to! We will take care of you, carry you up to little Venice, that place made famous all over this country because of its likeness to that Venice under foreign skies, that pride of the sea across the water. You will be entertained in a manner which I believe will please you. The Chamber of Commerce has said so, and our Mayor has said so, and you will find him a man, I hope, all broad out, like the Dutchman's pig; he is broad when he lies down, and he is broad in his ideas as he is in his body. (Applause.) Now, those people hold out those inducements to you. If you are afraid of getting seasick, don't go on the water; we will put you on a trolley car and send you out to Mount Clemens, and you may have a bath—if you need it; or you may go out to the lake, where they don't get seasick, and sail there in your sailboats.

"If you come to Detroit, I promise you on behalf of the photographers that we will use every effort to make the year 1901 the best, as this has been up to the present time, of all your conventions you have ever attended, and I want to see every man and woman, every photographer, and every one who is connected in any way with the profession, there; and I will do my little part of the great deal that will be done for you. Boston claims to be the 'Hub of the Universe'; and I agree with them; I am willing that they should be given that position; but if you don't believe that Detroit is the center of the world, come out and stand in one of our streets and look straight out!" (Laughter.) Cries of "Question! Question!"

President Stein: "It has been moved and seconded that nominations for place of next convention be closed. Are there any further remarks?"

There being none, the question was put and carried.

The Chair announced that nominations were closed, and put the question on the selection of Detroit as the next place of meeting, when everybody stood up, and with three cheers from the assembly, the Chair announced that Detroit had been selected.

Such was the excitement and evident wish of the Convention that the President quite forgot to put the question in the negative, and ex-President Guerin facetiously asked if the Chair were sure of the result of the vote. (Laughter.)

President Stein: "We have next in order to hear the report of the Nominating Committee. I would like to ask one of the ex-Presidents what has been customary in this particular, whether they have always read the whole report of the Nominating Committee; or is it usual to read separately the nominations presented by the Committee as to each officer, and act upon one office at a time before hearing the names nominated by the Committee for the remaining office or offices? As to the mode in that, I am in doubt."

Mr. Guerin: "Mr. President, you will find that of the candidates we have selected more than one for several of the offices; so you cannot elect them in a body by one vote."

President Stein: "That is not what I meant. We don't intend to do that. Will the Secretary please read the report of the Nominating Committee?"

The Secretary read the following .

"REPORT OF THE NOMINATING COMMITTEE.

"TO THE P. A. OF A.:

"Your Committee report the following nominations, viz.:

"For President: E. B. Core, of New York City.

"For First Vice-President: George B. Edmondson, Cleveland; David Rosser, Pittsburg, Pa.

"For Second Vice-President: Joseph Knaffle, Knoxville, Tenn.; Charles Rosiviere, Toronto, Can.

"For Secretary: Chas. Heath, Grand Rapids, Mich.; E. E. Seavy, Newcastle, Pa.

"DUDLEY HOYT, *Chairman.*
"F. W. GUERIN,
"WILL H. MOSES,
"F. G. SCHUMACHER,
"GEORGE W. VARNEY."

R. P. Bellsmith: "There being no other nominations, I move that Mr. E. B. Core, of New York, be declared the President of this Association for the next year."

Seconded.

The President put the question. It was carried, and the result was so announced.

President Stein announced again the names of candidates as reported by the Nominating Committee for First Vice-President, and stated that, as there was more than one candidate, the election would be by ballot, and named the following as tellers, to distribute, collect and count the ballots, viz.: R P. Bellsmith, Cincinnati; I. Benjamin, Cincinnati; E. Goldensky, Philadelphia, Pa.

In reply to an inquiry from Mr. Brady, of Orange, N. J., the Chair called for further nominations from the floor, if any present desired to make same.

Mr. Brady nominated Mr. George W. Varney, of Chicago.

Mr. J. W. Hughes nominated D. D. Spellman, of Detroit, Mich.

At this point a delegate rose and asked if the candidates as their names were presented, would not be good enough to rise, so that the Convention might size them up. (Laughter.)

Mr. C. P. McLean nominated Mr. Henry Doerr, of Louisville, Ky.

Mr. W. T. Ross nominated Mr. H. S. Klein, of Milwaukee, Wis.

A member suggested that at this rate there would be nobody left to do the voting, unless each candidate voted for himself, and moved that the nominations close. Carried.

The Chair read the names of the candidates presented.

Mr. H. S. Klein withdrew his name as a candidate for First Vice-President.

Mr. Hughes: "I would like to state a fact which people ought to know, that Mr. Spellman is from Detroit, and the Convention is to go there next year. He is a man who stands first-class as a photographer throughout this country, and is recognized as one of our best men. I would like to especially commend him to this Convention as a proper man for that position."

Mr. Geo. W. Varney: "I cannot serve, and will not run as an officer, and wish to withdraw my name."

President Stein: "Mr. Varney's name is withdrawn. The tellers will now proceed to do their duty and report the result when found."

The vote was reported and announced by the Secretary as follows:

Secretary Nussbaumer: "There were 247 votes cast, distributed as follows: Spellman, 154; Edmonson, 81; Rosser, 7; Doerr, 5; electing Mr. D. D. Spellman, of Detroit, as First Vice-President for the ensuing year."

The Chair announced as next in order the election of Second Vice-President, and stated the names formerly reported as candidates by the Nominating Committee; also announced that further nominations would be in order from the floor.

Mr. Ralph: "The Nominating Committee have done their work in an acceptable manner, and have presented the names of gentlemen with whom I am not personally acquainted, but who, I have no doubt, will fill the office acceptably, either one of them, if elected, in an eminently satisfactory manner. I find, however, that there is a strong sentiment among members present to present the name of another young man for your consideration; he has proven himself a man of ability, both as an organizer and as a business man. If he meets with your approval you will find that he will prove a hustler and an earnest worker, thoroughly fitted for his profession, and a man who possesses business ability to carry out whatever he undertakes. I present for your consideration for the office of Second Vice-President the name of Henry S. Klein, of Milwaukee." (Applause.)

Mr. Dozer: "I second the nomination. It is our duty to place in charge of the affairs of our Association men who have proven themselves worthy in our profession; I think that in Mr. Klein we have a man who will fill the bill. I second this nomination."

On motion of Mr. Giffin, nominations closed.

President Stein announced the names of the candidates, as proposed by the Nominating Committee and added to by the house, and directed the tellers to proceed with their duties.

Mr. W. H. Potter: "I think in justice to the South we ought to vote for the gentleman from Knoxville, Tenn." (Applause.)

President Stein: "I would ask the tellers to step here before they start collecting votes."

One of the tellers informed the Chair that half the ballots had been collected.

President Stein: "I have just been informed by the ex-President (Mr. Guerin) of something that I had forgotten, namely, that only those having bronze buttons, active members, are entitled to vote; those with silver buttons, or the stock dealers or manufacturers, have no right to vote."

Mr. Reeves: "I move that no one else feels that these stock dealers or demonstrators have nerve enough to vote." (Laughter.)

Mr. Guerin: "I think that's a mistake; they have nerve enough to do anything." (Laughter.)

The tellers having now completed the count of the ballots, the result was announced, viz.:

Secretary Nussbaumer: "Whole number of votes cast, 203; distributed as follows: —Knaffle, 61; Rossiviere, 13; H. S. Klein, 129; Mr. Klein is therefore elected as Second Vice-President for the ensuing year." (Applause.)

President Stein: "The office of Secretary is to be voted upon now. Messrs. Chas. Heath and E. E. Seavy are the names reported by the Nominating Committee. Are there any more?"

Mr. ——: "I would like to nominate our very efficient Secretary who has served us so well the last year,—Mr. Nussbaumer. I think it takes about a year to get well seasoned." Seconded.

Mr. Reeves: "I wish to add a third second to that. I have had experience along that line in State Association work. I know that position is hard to fill; I also know that a man has only begun to learn when he has filled one term. Our present Secretary, Mr. Nussbaumer, has done his work well, and I believe it is the feeling of the Association that if he will accept the nomination and election that we want to elect him again." (Applause.)

Mr. Miller: "I move that we make this nomination unanimous."

President Stein: "That cannot be done. There are two others nominated, who have not withdrawn."

Mr. Varney: "Mr. President, I have had several years' experience on the Executive Board, and I found it necessary to have some officer, some man, that is strong. During our deliberations this morning, we decided that Mr. Heath would fill that bill. I want to present Mr. Heath's claims before this Association as they should be."

(A Voice: "What's the matter with Nussbaumer? He's all right"!)

President Stein: "While you are preparing your ballots, I wish to announce that we have postponed Prof. Beck's lecture until to-morrow morning, it being now so late that it is not thought he would get proper attention at this hour; but we will open the meeting at 10.00 o'clock sharp to-morrow morning, as we have the awarding of prizes and two separate lectures, the one by Prof. Griffith and that by Prof. Beck."

A Member: "Which will come first?"

President Stein: "That I cannot now say; it will be announced later."

A number of the delegates present being now about to leave, the President at once recalled them by a sharp rap of the gavel, and asked if all had deposited their ballots before leaving; thereupon he requested the audience to retain their seats and hear the result of the ballot for Secretary, which was announced as follows:

"Whole number of ballots cast, 142; distributed thus: Heath, 28; Seavy, 18; Nussbaumer, 96. Mr. J. George Nussbaumer is elected Secretary for the ensuing year."

Adjourned until Friday, July 27th, at 10.00 A.M.

THURSDAY AFTERNOON—DEMONSTRATION OF THE IVES–KRŌMSKŌP PROCESS IN COLOR PHOTOGRAPHY.

At 3 P. M., on Thursday, July 26th, was given the demonstration of the Ives–Krōmskōp color process.

The following is a condensed report of the same:

"Mr. Frederick Ives made the demonstration in person and commenced by saying that although neither science nor discovery had indicated a successful method of direct color photography, such as the world had long looked for, we now had indirect methods of color photography of various kinds and degrees of merit; and the subject had grown so large, and the various branches so specialized, that a lecture upon color photography nowadays generally meant a lecture upon some particular process of color photography; and so it was that at this Milwaukee Convention, where practical color photography was for the first time being exploited to the members of the Photographic Association of America, two distinct systems were represented.

"Although practically distinct, they were based upon the same conception of the physiological analysis of light, and the published records made both of them appear to be developments of suggestions which had been published thirty and forty years ago; the fundamental idea belonged to Professor Clerk Maxwell, in 1861; and both the colored line screen and a photochromoscopic device were patented by Louis Ducos DuHauron, in 1868.

"It would be interesting to critically compare the two methods now brought to the attention of the members, pointing out the limitations and special advantages of each method; but it would hardly be considered appropriate for the lecturer to make such comparisons, under existing circumstances, and he should deal almost exclusively with the 'Kromskop' system, which he had been invited to demonstrate.

"This system had been suggested in a crude way, in the lecturer's childhood, but he had been able, in the course of more than twenty years of study and experiment directed to that end, to supply certain 'missing links,' and to evolve a complete and practically successful system, which possessed one exclusive merit, which was that of presenting to the eyes an absolutely 'structureless' image, in the exact colors of nature, and in apparent solidity. Not only were the forms and colors made to reappear to the eye, but every visual quality, such as texture, translucency, lustre, so that the very object itself appeared to stand before the eyes—a painting which in reality reposed in a gallery across the seas, or a dear friend, perhaps long since passed away. All this was now accomplished with a camera as simple in operation as a kodak, and a viewing instrument used like a stereoscope.

"That sounds very simple, indeed, but this achievement had nevertheless been marked by the issue of a dozen patents for ideas which the original investigators in this field had not conceived, and some of them ideas without which success would now appear to be impossible. It would require a series of lectures, or a bound volume, to trace the development and adequately set forth the science and mechanism of this method in all its various forms and applications; the lecturer would have to content himself with a practical demonstration of the photographic analysis and optical synthesis which brought back to the eye the perfect reflex of nature.

"Briefly, the method consisted in making three photographs to represent the analysis of all compound colors into three simple colors, which are red, green and blue—narrow bands of color at the two ends and middle of the spectrum—and the subsequent blending of these three photographs into one, by optical means.

"The photographic analysis could now be accomplished by means of a camera which produced with one lens, upon one sensitive plate, as simply as the production of an ordinary photograph, three images, identical in size and perspective, but with difference of light and shade due to filtering the light forming the three images through three different color screens. These three photographs, although without color, constituted a color record, just as the indentations in the wax cylinder of a phonograph constitute a sound record. To visually reconstitute the original object, or scene, it was necessary to see one of these pictures as red, another as green, and the third as blue, but blended into a single image. And to complete the illusion, the images must be in stereoscopic pairs. Such a reconstitution was effected by means of the 'Krōmskōp,' an instrument which consisted essentially of a case and four pieces of colored glass. The system was not, however, limited to this means of synthesis, and permanent color prints could be made by various processes from the same 'color records.' The Krōmskōp was the lecturer's favorite instrument, because it was the only means by which a strictly mirror-like reproduction could be achieved.

"The lecturer demonstrated the blending of the three colored images upon the screen by a lantern, which showed the colored images first side by side, separately, and then caused them to slide over each other, first producing a jumble of crude colors, and then, when they were finally superposed in perfect register, suddenly flashing out the true colors, with a spectacular effect which elicited prolonged applause."

Fourth Day's Proceedings.

The Convention met pursuant to adjournment, and was called to order at 10.30 A. M. by President Stein, who at once announced his appointment of the following

Committee on Resolutions.

W. I. Scandlin, New York City, *Chairman*;
George W. Gilson, Buffalo, N. Y.;
F. D. Todd, Chicago, Ill.;
Mrs. Fitzgibbon Clark, St. Louis, Mo.

The committee were instructed to retire and prepare resolutions of thanks to the Citizens' Business League, the Milwaukee press, the Mayor of Milwaukee, and citizens who have extended kindnesses to the Convention.

The President then introduced Prof. O. W. Beck, whose lecture follows:

[Note.—Owing to the fact that this lecture was illustrated by constant reference to diagrams and pictures, it is impossible to do full justice to it here. Half of the charm and effectiveness consisted in the deft manipulation whereby Prof. Beck suddenly injected a light, or cut off a portion of a picture with a piece of cardboard, to illustrate his points. The lecture is therefore given below in somewhat condensed style.—EDITORS.]

"LIGHTING."

PROFESSOR O. W. BECK.

Professor Beck spoke substantially as follows :

" The illustrated section, demonstrating laws in modeling and picture construction, can only be touched upon. When speaking, the day before yesterday, on the principles that underlie art, I spoke of all that was attainable by simple, straight photography. Photography now has a technical equipment which is capable of producing very high art, and interpreting very much what the individual has to say. What is it, then, that keeps the average photographic output at such a commonplace level? It is simply that photographers as a whole are only on the brink of the art world. They have yet to learn its language—the language that is in line—its length, its thickness; the language that is in mass, and the inter-relation of mass and line—further, the language of the modeled form and that of the flat surface; again, that of tone and of color. The whole world of art lies before you; and it is a most wonderful world, full of delight—the very realm of the beautiful. But before we can enter this world of art we must accept that its '*portal*' is '*study*,' and that we must go to the real masters to-day, as art students sought them in the past. We must get at the thing itself, and must learn to throw off the narrowing prejudices entertained up to the hour. For instance, there is an insistence to-day to make *art in photography* entirely dependent upon lighting; and then there is lauded throughout the land a system of lighting that, while it is in vogue, is a measure of excellence for all photographers.

" Now, ladies and gentlemen, lighting is a useful tool, but it is only an infinitesimal part of the number of elements that go to make up the framework of a picture. My experience in photography is this: that if the photographer only knew how to lead the mind of the one looking at his picture to the cherished point of interest, his lighting would not give him so much trouble. More than that, if the operator of the camera only knew what 'movement' in a picture means, he would make his lighting serve him in place of being controlled and worried by a system of lighting in vogue. And, finally, if the photographer only knew what to do with his background, making it right for each new sitter, his lighting would be but a plaything to him. Do not forget, gentlemen, please, that a picture begins *not* with the face of the sitter upon which a certain light is thrown, but it begins with that part you usually form by your scissors—the four boundary lines, or the oval of the picture plane. From these the picture gets its character and force, and from these you must learn to lead the mind inward to the desired point and hold it there. I know that is a new way for you to look at art study, but, since art has arrived in photography it is a fact that we cannot escape.

" As at present conceived, lighting in a vague way is the endeavor on the part of the photographer to secure the modeling of the head, and he hopes that he will at some time make the picturesque effect of the *ensemble* of the picture. The first conception, that good lighting of the head brings about modeling is correct; while the second, the hope that such modeling will secure the picturesque *ensemble* of the picture is erroneous. I think that the study of lighting is practically confounded with the study of the management of the prime elements that I explained in my former lecture. Take these two examples, for instance, they have a system of lighting very much alike. One is a painting by Van Dyke, and the other a modern photograph—both have a good deal of modeling and are plastic in the head. Is the painting satisfactory? Yes. Is the photograph satisfactory? No. Why? The painting attains to actual portraiture, while the photograph remains only a commonplace likeness. Why is this? What is the reason? Well, first of all, the face in the painting has a good light upon it to make it firm, both as a form and as a light spot. If the average photographer had done this much he would say : 'That much accomplished is very good, it models well, it looks like the sitter, and the head is plain and can be well seen. I do not know very much about the rest of the picture, whether I should make it three-quarter length, full length, or only a bust. Frankly, I don't know, and I hope that in any case it will look all right.'

" The painter reasons quite otherwise : ' This lighted head is so forceful, so intense in its concentration of interest, that it must spread its influence over surface until it finds its balance. Thus, the man's coat is found to be black, and, as a half-tone background, would be useful to relieve the coat as well as the face, we will see how much the head can stand of these. We find that it balances when we make the figure down to just below the hand. Now, it is necessary to introduce a second strong light somewhere in the lower portion of the picture; thus we put in a strongly illuminated hand, and at once the head feels better; its over-accentuation is gone and a balance has been approached; our eye is led into the picture from below to the hand, our interest is led upward by the climbing lines of the arm to the head, and by this treatment we find we have expressed more than mere likeness—we have much of the man, it is more of a portrait.'

" Does that not prove to you that a picture depends upon more things than a well-lighted head? Now, for instance, this picture could be ruined even yet, if this gold braid on the seam of the coat were allowed to make that parallel descent from the head to the lower edge of the picture. That is an influence for bad which must be counteracted; therefore, the artist places a gloved hand so as to overcut it, and thereby draws the interest back to the head, circlewise. Does that not again prove to you that lighting by itself does not insure art, but that it is only one of the innumerable factors that go to make up a picture?"

After this exposition, the laws that underlie "modeling" were explained from illustrations. The various systems of lighting were all taken in turn. After that followed a criticism on a modern English portrait photograph, showing where it lacked proper lighting to make it model. Mr. Inglis' system was analyzed, and it was found that, although it confined itself to only one system, that its serious study was to be recommended to all in the profession. One example was found to be an excellent portrait in every way, and the light so thrown upon the face that we fairly looked into his eyes; moreover, there was a feeling of his, the sitter's, bodily firmness—in fact, of his reality. There were a few shortcomings pointed out in two more examples, and then a Rembrandt followed, where a very unusual lighting effect was explained in order to show that any kind of lighting is good, so long as the rest of the picture supports the theme of light. The question whether lighting insures the portraying of character was next proven to be untrue. Then followed two pictures in which was demonstrated clearly that, even though the lighting is insufficient, the treatment of the background can often make it satisfactory.

The subjects of "tone" and "atmosphere" were elucidated by a explanation of what constitutes the difference between decorative art and realistic art. Finally, the subject of "values" was touched upon in a way to show that to get them was practically three-fourths of the art problem in photography.

The lecture closed with an explanation of the merits of some of the photography in the Exhibition.

President Stein: "Next in order will be the reading of the awards of prizes made by the judges, Messrs. M. J. Steffens, of Chicago; J. C. Strauss, of St. Louis, and F. M. Somers, of Cincinnati. Please to remain after that is finished, in order that you may hear Prof. A. H. Griffith, whose lecture will then be given. First, the Secretary will read the names of certain persons whom the Treasurer reports have not yet claimed their railroad certificates."

The Secretary read the same.

President Stein: "I have here the original list of awards just as it was handed to me by the judges, and as I read them by number the First Vice-President, Mr. Sperry, will say who the parties so referred to by number are; and as the names are called I would like the respective recipients of prizes to promptly step to the stage and receive the prizes due them, except those awarded diplomas. The diplomas we will have to mail, as they have not yet been filled out. We have not had the time. We will send them when we send the certificates of acceptance. I hope you will excuse me. I will sit down. I have a badly burned foot." [The result of an accident to President Stein at Whitefish Bay on Thursday night, due to the carelessness of an attendant in igniting the red fire.—EDITORS.]

The list of prizes was then read in the manner indicated by President Stein, and was as follows:

LIST OF AWARDS OF PRIZES.

Grand Portrait Class.

1st Prize.—No. 27, Moore and Stephenson, Atlanta, Ga.; life size figure bust.
2d Prize.—No. 62, Dudley Hoyt, Rochester, N. Y.; gold medal.
3d Prize.—No. 65, J. E. Giffen, Wheeling, W. Va.; silver medal.
4th Prize.—No. 97, E. C. Dinturff, Syracuse, N. Y.; bronze medal.

Genre Class.

1st Prize.—No. 40, E. S. Curtis, Seattle, Wash.; figure head.
2d Prize.—No. 16, G. Moses & Son, New Orleans, La.; gold medal.
3d Prize.—No. 57, Baker Art Gallery, Columbus, O.; silver medal.

Miniature Class.

1st Prize.—No. 37, I. Benjamin, Cincinnati, O.; gold medal.
2d Prize.—No. 10, D. Rosser, Pittsburg, Pa.; silver medal.
3d Prize.—No. 63, Dudley Hoyt, Rochester, N. Y.; bronze medal.
4th Prize.—No. 17, G. Moses & Son, New Orleans, La.; diploma.

Class A.

1st Prize.—No. 59, Elias Goldensky, Philadelphia, Pa.; gold medal.
2d Prize.—No. 73, A. F. Proctor, Huntington, W. Va.; silver medal.
3d Prize.—No. 115, W. M. Morrison, Chicago, Ill.; bronze medal.
4th Prize.—No. 41, E. S. Curtis, Seattle, Wash.; diploma.

Class B.

1st Prize.—No. 49, E. E. Dexter, McKeesport, Pa.; silver medal.
2d Prize.—No. 74, A. F. Proctor, Huntington, W. Va.; bronze medal.
3d Prize.—No. 110, C. S. Bateham, Norwalk, O.; diploma.

Class C.

1st Prize.—No. 30, Louis Schreiber, West Bend, Wis.; silver medal.
2d Prize.—No. 113, J. F. Denninger, Neenah, Wis.; bronze medal.
3d Prize.—No. 84, A. L. Jackson, Tacoma, Wash.; diploma.

Landscape Class.

1st Prize.—No. 104, H. C. Meyer, Boise, Idaho; silver medal.
2d Prize.—No. 28, J. H. Field, Berlin, Wis.; bronze medal.
3d Prize.—No. 67, Robert Wilkinson, Montpelier, Vt.; diploma.

Marine Class.

1st Prize.—No. 64, Chas. E. Bolles, Brooklyn, N. Y.; silver medal.
2d Prize.—No. 11, H. R. Fitch, San Diego, Cal.; bronze medal.
3d Prize.—No. 23, H. H. Morrison, Seattle, Wash.; diploma.

Mr. W. H. Moses: " Mr. Van Norman's name was not mentioned in the list of awards. His pictures came too late to mention; but I consider them as artistic, if not the most artistic pictures, displayed in the hall; and if it is agreeable to the members I would make the motion that he be awarded some special trophy, commensurate with their merit." (Applause.)

Motion seconded by Mr. I. Benjamin, of Cincinnati.

President Stein: " It is moved and seconded that some special award be given Mr. George H. Van Norman for his display. It is proper to explain that he intended to have his pictures get here in time, and supposed they were here, but they did not arrive until last Monday, after the pictures had been judged; in accordance with the rules for entering pictures we had to rule him out of the contest, the same as we would any other late comer. The pictures were not here on the last day of grace, and we could not make any exception. Are you ready for the question? What should this award be?" (A Voice: " Some trophy.")

The question was put and carried. The Chair directed the Secretary to make a minute of the vote.

President Stein: " There will have to be quite a bit of preliminary work done at our next place of meeting, owing to the fact that there are no officers resident there; and, as the present officers hold over until January next, I think I will appoint as an acting officer in Detroit Mr. Clarence M. Hayes, to take charge of our affairs there. (Applause.) He will see to it that proper quarters are secured. Perhaps you can get a hall like this without paying for it. (Applause.) Let him attend to all that. Of course, when the new Executive Committee meets in January next that ends his duties; they will take charge then.

"We will now hear the report of the Committee on Resolutions."

Mr. W. I. Scandlin, editor of the PHOTOGRAPHIC BULLETIN, New York, as Chairman of the Committee on Resolutions, submitted the following:

"REPORT OF COMMITTEE ON RESOLUTIONS.

"*To the Photographers' Association of America:*

"The committee, appointed by you this morning to recognize the courtesy received at the hands of the citizens and others of Milwaukee, beg to report as follows, to wit:

"*Whereas,* the Photographers' Association of America, at its 20th annual convention, has received at the hands of the press, the business interests and the citizens of Milwaukee a most cordial welcome and hospitable reception, and a succession of courtesies which have added to the enjoyment of the convention; therefore, be it

"*Resolved,* That the thanks of this association be extended to the Mayor of the City of Milwaukee for his cordial greeting, to the Citizens' Business League, and the daily press, and to the citizens of Milwaukee for the many courtesies received at their hands.

"W. I. SCANDLIN, *Chairman.*
"GEO. W. GILSON,
"F. D. TODD,
"MRS. FITZGIBBON CLARK."

President Stein: "The resolutions are before you; what is your pleasure?"

Mr. Seavy: "I move that we adopt the resolutions and that they be spread upon the minutes."

The motion was seconded, and a rising vote called for. The entire house rose, and the chair declared the resolution unanimously adopted.

After announcing that the excursion on the Crosby line of steamers would take place at 2.30 P. M., the chair introduced Prof. A. H. Griffith, who spoke as follows:

ADDRESS BY PROF. A. H. GRIFFITH.

"Mr. Chairman and Officers, Ladies and Gentlemen: I don't quite like to be placed in this position. You have had this morning a very delightful talk on the rules and technicalities of art from a gentleman who stands high enough in the profession to need no words of mine; and then he was followed by the awarding of prizes, which, of course, interests and distracts the attention of all the people, because naturally you wish to know the winners; under such circumstances I feel just a little bit handicapped, and for that reason I am first going to answer a question put to me. A gentleman said yesterday, 'You are always talking of "high ideals"; you say, "Never mention money"; you tell us to take pictures without exhibiting the machinery in operation. Do you ever expect that we will do that?' No, I never expected you would do a thing that I told you! (Laughter.) But I do hope and believe you will do better than you did before when I get done telling you. (Applause.) I want to make a confession. The other day you received me most grandly; I talked to you because, as I told you, I was a Quaker, and I had to wait until the spirit moved me, as well as I knew how; you received that very nicely, and you paid me the compliment of asking me to go on again. I went away from here so full of the 'blues' that I walked by the side streets, didn't want to see a single soul that I knew for an hour, because I had failed; you say 'that is egotism.' It is not true; the gloomiest and most depressing moments I have had are after I have talked to people and feel that I have failed. I set my ideals high, and for that reason I fail. The difference between a poor photographer and a good one is that the good photographer makes bad pictures now and then, and the poor photographer makes good pictures now and then. (Laughter.) If you have high ideals you will do better. The man that shoots at the top of the tree must aim higher than one who shoots at the roots. Now, I agree perfectly with my friend, Mr. Beck, in all the technical details that he gave you in regard to pictures; it is what I have been trying to preach to you; and I wish you would read more and look more, and study more, and learn to know the people who come to you;

but, for Heaven's sake, don't fill your head so full of rules that your work will be done with a straight edge. I think sometimes of the boy of whom I told you that I saw in a store a few months ago, who, when he wrote a letter to his best girl, would write it out on a piece of wrapping paper first, then cross it out and correct it, and put in the proper grammatical constructions, all the periods, the commas, the semicolons, and then he would take another piece of paper and a fine pen, and would most elaborately and beautifully write it and send it off to the girl. (Laughter.) I would not give you a nickel for 5,000 such letters, with all the soul and heart swept out of them; I would rather have a letter with a line crossed out now and then; a word crossed out now and then, but reflecting the truth of nature in every line. Let it come from the heart, full of feeling and affection. (Applause.) And so when you make your pictures, make them with your best knowledge as to technique, with the best you know as to your chemicals and your lenses and your paper and all that, everything you know on that line, and then throw all aside and put your soul into it, and make pictures that will live. (Applause), That is art! No man ever took a ray of sunlight and threw it on a face, and painted it absolutely as he saw it and made a picture. It is true a man should copy nature; nature, you say, never goes wrong—if we understand her, she never does, never; but how few of you do know nature! Nature is the shyest of all the goddesses you have; you must woo her, make love to her, study her moods, catch her at her best, or else you fail. You talk about doing away with machinery! How long is it since the day when every gallery was up a narrow stairway, any old place would do for a gallery; how long since a packing box, covered with a bit of cretonne or calico, and a 25 cent mirror, and an every day brush and comb, answered for the furniture of a retiring room?

"And now, Mr. Stein, or Mr. Klein, all those people have elevators and an attendant to carry people upstairs, and yet you laughed at me when I told you to hide the machinery! Why, it is not so long ago since you began to put a wrapper about your pictures. Why do you do it? Because you know the sensitiveness of people; some people can go quietly out of their homes and stand in front of a slaughterhouse and never give a tremor; there are others, again, who cannot do this; and you find men and women who are driven out of the room by a cat; and I love them. The brother of the First Napoleon simply went into a conniption fit if a cat was in the room. You go into a butcher's shop, and if the man cuts off the bones and ragged edges, and throws them on the counter, you shudder and shiver; the thing is all antagonistic to you, and you never go back; but if he takes them off nicely and neatly, and throws them one side out of your sight, you are captivated with the cleanliness—pleased with it. It is just such dispositions that you must face; you have to deal with people of refinement and taste, and such temperaments cannot be met with brutal force; that creates antagonism, and you have lost your point. There is a man right in your convention to-day that will next year come before you with a hidden camera, a camera that is hidden from sight, simply because he knows that it is an instrument of torture to some people. That is why I said to you yesterday, or the day before, to get rid of your 'operating' room; don't cut off people's heads and arms and legs taking their pictures; do it as though it was a social call, that they came in and paid you for their pictures. Do it all so pleasantly, so genially, so agreeably, that they will say that you are the best man in town. Greet your patron with a smile, and he will give back the best that is in him; his soul will come out to you. There are a great many things that we might study. I go into every exhibition and look at the genre pictures; and I look at the other pictures, and I think, this photographer did not know the difference between fact and fancy, between mythology and poetry, and imagery and fancy. He don't know where the line of one commences and the other ends. One man said to me upstairs (in the exhibition hall), 'There is a woman dressed in an evening costume and taken in a snow scene!'

"That's true; it's fancy; it is poetic license; that is right under the circumstances, with that subject; but when you look at a painting, as I did a short time ago, of the surrender of General Lee to General Grant, which is an historical fact, and I found General Lee dressed magnificently in his uniform, and General Grant without a speck of mud or a spot on him; with elegant lace curtains at the windows and beautiful furniture, and a magnificent carpet on the floor, I think that, however well it is painted, the man that did it was ignorant of historic facts; he knew absolutely nothing about them; for there was not a carpet anywhere south of Mason and Dixon's Line in 1865! (Applause.) The carpets had all been gathered up and cut into strips to make cots for the soldiers; and there wasn't a nice lace curtain in the whole of that country. I am talking of things that I know about. I do know that General Lee was dressed magnificently that morning in a new uniform that had been sent to him from Richmond only a few days before; he wished to pay a compliment to General Grant; and I do know that General Grant came in there covered with mud and all wet, and apologized to General Lee for appearing before him in that costume, because he hadn't been off his horse for twenty-four hours. (Applause.) Those are historic facts; and you have a right to put them in your picture; you have no business to lie or to tell people something that never occurred. Read Homer, Shakespeare, Byron, and Moore, and have your heart filled with poetry, your heart filled with romance and fancy, and then take up these old characters of Grecian mythology and make pictures into which you put all the fancy you can, and let it run riot, but keep up the harmony, and that is all right; but I don't want kitchen scenes in which people are dressed to suit the scene, and then an oak chair put in; I dislike those things; they are all wrong. The line should be drawn between fact and fancy. Do you say, 'We are limited in subjects'? Great Heavens! Subjects are as numerous as people. You have never touched, I think, in all your conventions—I have yet to see a single Cleopatra and Marc Antony. Cleopatra—that woman who stands at the head of womanhood in this world! Why? Because she was loyal to herself, and to her country. I know they call her the old serpent of the Nile, and tell you bad tales about her; but place yourself two thousand years ago, and find a woman standing alone on the throne of Egypt, in whose veins there coursed the blood of a hundred kings, and you will find her combating the legions of Rome, led on by such people as Julius Cæsar and Marc Antony! She found that her own generals were not equal to the task of combatting these men, that her own cohorts, as numerous as the sands of the desert, were not equal to the trained legions of Rome; and when she found that all had failed her, she used her woman's beauty, her woman's tact, and said, 'I will conquer the conqueror,' and stepping on board her boat, she floated down the Nile under the purple canopy of silken curtains, her boat propelled by a hundred oarsmen, and the slaves decked in gold and silver and all the wealth of her country, and there, adorned in nature's garb, alone, she met Julius Cæsar and conquered him, and saved her country—a loyal, great, grand and glorious woman, whom history has traduced. Isn't that a theme for you? Why have you never taken up the story of Cleopatra? And then, if you want something more attractive, can you imagine her standing on the balcony beyond the banks of the Nile, and straining her eyes to look if she might see Marc Antony, the man she loved, and draw him up to the porch where she was, trying to protect herself from the mobs. There is no more dramatic scene in all this world. Then, you say, 'I want story, I want romance.' Why, every rock and rill, every stream, every hill in all this beautiful country has its romance and its Indian traditions; all you need is to take the subjects up and study them. Why, if you will go into the woods and sit down under the leafy shades of a protecting elm, and there bring about you all the spirits that have haunted that land, what a world of beauty and glorious imagery of fancy is all about you! But you must be an artist to be able to do this. There are so many of us who are mistaken in our calling; a young man thinks he is called to be a preacher, or a missionary, and must go out and save the world—he thinks he is called to do this thing; and honestly many of them mistake the call, like the man who heard somebody calling 'piggy' in the next lot. You people think you are artists sometimes, when you are not. You have not brought yourselves up to it. You have a little of the technical qualities; you have a little of the knowledge; but you must study the story of the life of the world. Read history and poetry. Take up everything your own nation furnishes you, and then you will begin to get something of the knowledge of the world and your art, which you must have. Some pictures set me to crying, just as some music moves me, so that I cannot express myself. A storm cloud passing over me affects me; the sunshine and the rain affect me. You are all more or less thus affected; and when you inspire yourself and fill yourself with love and devotion to your art, then you will commence to make pictures, good pictures; then you will commence to make portraits that are better than speaking likenesses; you will commence to model your faces, commence to get the light into them, commence to make mother's faces as Rembrandt painted the face of his mother. You remember he put into her face the glow of that golden ray of sunlight. To him she was his very life and he put into her face her very soul—the glory that should rest on every mothers' head. That is what makes his pictures famous, and what makes them live. He had rules; he knew the rules of Michael Angelo, Raphael, and all those people that had gone before, and then he made a higher and stronger rule for himself—to be the best, and it lies within your power to do the same. You can be the best, if you will begin to think and study that which is about you. Yesterday some kind friends took me for a ride through your beautiful city and out to your Soldiers' Home. What a magnificent thing it is to have been a soldier in this country, and to live at a delightful spot like that! As we drove over the road and made a turn, the sun was just gilding the house tops over on the hill beyond, and the valley lay all in the cool, green shades, and the gilded spires and house tops beyond made a picture most magnificent; yet, I suppose a thousand soldiers pass back and forth there each day and never see one of God's paintings. We are all so filled with the rush of the world; we rush to the office and to the shop in the morning, do our work and rush home again, get on a clean collar and a pair of cuffs, and rush to the theatre, to see a mimic stage, a mimic scene that man makes, and hold our heads so close to the ground looking to see if some man has not dropped a dollar, that we miss the whole glory of the landscape that God has painted for us free. (Applause.) When you open your eyes, when you learn to see and teach yourselves to see these things then will come out of you all that is best, and you will hide the machinery. Another man says to me, ' You say, don't talk about dollars.' Why, Hollinger never opens his mouth about a dollar in *his* gallery. He won't allow dollars to be talked of there; he leaves his doors open, so he tells me. There is nothing in there to steal I know. (Laughter.) He doesn't talk about dollars, does not allow the question of money to come in. We cannot always work for love; we must have food, clothing, and all those things that make life happy and comfortable; but you can now and then forget the dollars. Last night at a lecture in your city I heard a man by the name of Elbert Hubbard. I wish all of you could have heard him; you would have been thrilled by him. That man was once a dock laborer at a dollar a day in Chicago, but there was something in the man, and he drifted into oratory. And now he is making the famous Bancroft books. He prints some old poem, and he puts into it the spirit of genius that makes life livable. If you talk to that man he never talks of money. He is working simply for the love of work, and making money incidentally. There is a man out here near St. Louis that you have perhaps heard me speak about, who makes pottery. He has gathered up the old clay banks that the Spaniards worked; and he says that he can model it because it has just enough metal in it to make it stay in position. He is making pots which are demanding the attention of connoisseurs both in this country and in Europe; they all wonder how it is that he can make them so thin. It is the marvelous clay that is behind it all. He told me, with his great black eyes looking me in the face, ' My wife has spent half her life figuring how much more I would be worth if I had made so many more thousands of fire-pots at ten cents apiece. I cannot make them; it is not in me. I have to make the queer ideas that come to me.' And there they are, thousands of them, with that marvelous glaze upon them, no two alike. A man comes in and asks, ' Can't you make a hundred like that ?' And he says, ' I don't know how I made that. I put in a little bit of this and a little bit of that, something like the old lady who made her cake ; and whatever comes out, it is all I want.' But his work has the mark of genius in it. And you see it sparkling with that rare tint that catches the sunlight when he holds it up to the window. When you get yourself filled full of that sort of spirit of devotion to your art, you will be ready to make pictures that will live. But don't forget the business side ; don't forget that business must always be attended to ; if you have no particular gift that way, get somebody else in your employ that has, and let him attend to the financial side while you are looking after your art. Then, as I said to you the other day, you will take childhood with all its charm of innocence, with no care but to play with the flowers that spring up in the springtime. You will take pictures of young men and young women full of life and energy and ambition ; ready to meet the world and its battles and win success ; you will take middle-age, with all its cares and struggles ; the mother, with her little brood about her ; the father, who is fighting the battle to keep them secure from want ; you will take this old age, so magnificently, so grandly, so crowned with glory ; every wrinkle will mean a halo ; every gray hair will be full of dignity and reverence and respect ; and art will creep into it ; and when you have sold your pictures or delivered them, you will go into your den and pull your hair, and have the ' blues ' because God didn't give you the power to do better.

" I thank you." (Applause.)

On motion, adjourned *sine die*.

All copy for September number must be in our hands by August 15th.

BRIEF OPINIONS OF LEADING PHOTOGRAPHERS REGARDING EXHIBITS.

W. M. Hollinger, New York: "The Convention being moved West, has brought in a great number of new men, who have not been attending conventions in the past. In this large access of new material I think the general tone of exhibition work has been lowered from what it was last year; but the Convention, as a whole, is the best I ever saw. I think the color process the most wonderful thing I ever looked at."

W. H. Moses, of G. Moses & Son, New Orleans: "I am delighted with the collection; ahead of anything shown previously. I think the throwing of the whole field open has proved a success."

A. H. Griffith, Detroit, Mich.: "I have not examined the exhibits in detail, but speaking generally, the exhibit is away beyond anything we have had before. The improvement is especially noticeable along art lines. Photographers are leaving the mechanical side and are developing a fine artistic sense."

E. J. Davidson, Secretary Missouri Association: "I think the exhibition one of the finest I have seen, notably so in the landscape collection. There are certainly some magnificent things there. I think Van Norman's work very superior, forcibly reminding one of the old masters, many of whose masterpieces I have examined in Europe."

W. C. Nicely, President Indiana State Association: "I think the exhibit much better than the year before last. The stock dealers' displays are ahead of everything I have seen in that line."

J. Nicholson, Indianapolis: "I think it very fine in spots."

W. G. Thuss, Nashville, Tenn.: "The exhibit in general is good. I think the throwing into an open field is a mistake, and that three sections would be preferable. I think there is a noticeable falling off in the lower grades."

J. E. Giffin, Wheeling, W. Va.: "I think the exhibit the finest ever shown at any convention."

Frank Moore, of Moore & Stephenson, Atlanta, Ga.: "I think the pictures, as a whole, better than last year, but photographers have come here expecting too much. They can't carry in their minds the quality of pictures through the year."

F. G. Schumacher, Los Angeles: "The exhibit is very fine, the best in general we have ever had; miniatures especially fine; the delicate handling and the technique show great care all the way through, and an improvement upon other years."

Dudley Hoyt, Rochester: "The work is generally above the average, and the majority of people have improved a great deal. A great many are represented here for the first time. This is a good thing, as it interests these exhibitors and practically proves to them the advantages of national conventions in the access to new ideas and methods."

G. Cramer, St. Louis: "The exhibit compares favorably with former years, and is as good, if not better. I think the Kromskop the most beautiful and the most perfect method of representing the colors of nature—a most ingenious invention. The carbon plates in the exhibits were particularly fine and showed most artistic effects. The Convention is one of the most successful we have had, the attendance large, and the quality as well as the quantity good. A great deal of credit is due Mr. Stein for his hard work."

JOHN EDGEWORTH, of G. Cramer & Co., St. Louis: "The exhibits are among the finest I have seen in the twenty conventions I have attended. I refer more particularly to the Grand Portrait Class, of course."

A. S. RALPH, President Wisconsin State Association: "I think the benefits of the National Convention will be generally recognized by the Wisconsin photographers. We had over two hundred of them here in attendance, besides their ladies, and they evinced great interest."

F. W. GUERIN: "I think we had a beautiful lot of pictures on exhibition, and not so many poor ones as we have sometimes had."

CHARLES A. NAST, Denver: "That the present exhibition, as a whole, ranks quite as high as that of last year. While there are no single better pictures than were exhibited last year and a few quite as bad as the poor ones, the general average is much higher; the great middle ground is better represented. Last year the exhibition left on my mind an impression of black, under-timed, hard, harsh things. This is a more restful and quiet exhibition on the whole."

JOHN SCHNEIDER, Columbus, O.: "I think the exhibits this year are of a higher order than we have ever had before. A great many workmen who last year had pictures bordering considerably on the so-called 'freak' idea, have retained a great deal of the artistic side, while they have improved the technical quality of their work, so that it is now photographically better while artistically good. I never enjoyed a convention better—plenty of enthusiasm, and everything has seemed to go smoothly and agreeably."

A. M. BOWERSOX, Dayton, O.: "I think the exhibits are up to the standard, if not better, than those of previous years. They average better."

GEORGE H. VAN NORMAN, Springfield, Mass.: "I think the exhibit is one of the best we have had, and shows an advance along several lines. There is more naturalness of lighting in the better pictures and less of the made effect—what might be called the 'puttying-up' process."

I. BENJAMIN, Cincinnati: "The Convention of 1900, although lacking in numbers of truly artistic portraits, showed a gratifying absence of those fearfully crude efforts which were characteristic of the last two conventions. Taken as a whole, there was decidedly more individuality and less merely imitative work, also a more careful regard to balance than has previously been shown."

J. A. BRUSH, Minneapolis: "One of the finest exhibits we have had; has given me as much pleasure as any I have visited in the last thirty years. The general improvement is very noticeable."

H. J. BRADY, Orange, N. J.: "The exhibits I have examined are very fine, perhaps the best at any of the conventions. There is a tendency toward more artistic work, which I attribute to the valuable suggestions made to photographers by lecturers and others at conventions. The old style of stiff photographic effect is passing away."

George M. Edmondson, Cleveland: "Take it as a whole, the exhibit is superior to any collection that I ever saw. I think the abolishment of the system of separating the different sections of the country is an improvement and that it stimulates to better work."

O. W. Beck, Cincinnati: "The notable thing of this Convention is the large number of individualities it shows. The men are thinking individually. The recipe is sinking into the past. Men are working upon distinct lines based upon art principles, and the forward movement is pronounced. It is not so much what they show now in the accomplished fact as what some promise to do. The talent that is yet to develop into a fullness is evident at very frequent intervals throughout the exhibit."

THE EXHIBITS.

THE exhibits of the dealers and manufacturers were this year more numerous than usual, and the fact that they occupied the entire floor space of the large Exposition Hall gave them additional prominence. Starting at the north end of the hall, and walking down the center aisle, we found upon our right hand the displays of Messrs. Rough & Caldwell, of New York; The Cramer Dry Plate Company, The American Aristotype Company, The Eastman Kodak Company, The Lovell Dry Plate Company, The Columbian Photo Paper Company, Ralph J. Golsen, and E. & H. T. Anthony & Company, while upon the opposite side of the aisle were Carl Ernst & Company, The Golden Novelty Company, L. W. Seavey, The H. Lieber Company, Excelsior Dry Plate Company, The Hammer Dry Plate Company, The M. A. Seed Dry Plate Company, Fishel, Wessler & Company, C. P. Goerz & Company, and Burke & James.

Spaces around the sides of the hall were occupied by The Ives Kromskop, The Globe Scenic Company, Tapprell, Loomis & Company, Manhattan Optical Company, Scott, Harris & Company, Alvord Opaque Company, Pin Lock Medallion Company, Gibson & Company, A. J. Beggs, James H. Smith & Company, James Inglis & Company, Bausch & Lamb Optical Company, Tolidol, Standard Dry Plate Company, Parisian Novelty Company, Clipper Camera Manufacturing Company, The Varney-Caulkins Scenic Company, The Aristo School, The C. W. C. Company, D. F. McCall, L. H. Cohen, Columbian Dry Plate Works, John F. Decker, and the International Color Photo Company.

Desks were occupied on the floor by The Illinois College of Photography, A. M. Collins Manufacturing Company, Albert Sellner, Morton's Photo Oil Paints, Wayne Chemical Company, Deardorff Optical Company, New York Dry Plate Company, Northwestern Stamp Works, Scovill & Adams Company, Hein Specialty Company, Sweet, Wallack & Company, E. B. Core, H. A. Hyatt, Des Moines Photo Materials Company, Professional Photographer, Willis & Clements, School of Photography Lewis Institute, Carl Ruegge, H. Reimers, E. M. Katz, C T. Shape & Company and J. B. Hosteller.

THE OHIO-MICHIGAN PHOTOGRAPHERS' ASSOCIATION.

CONVENTION, August 21st–22d–23d, Put-in-Bay, Lake Erie, Ohio.—We make our first bow as a united association with the conviction that "In union there is strength," and that with our combined membership we shall make a convention that will be much more profitable to attend. Believing that more time is generally taken up by routine business than is necessary at conventions we will endeavor to condense that and devote more time to practical things that concern each of us in our own business as photographers.

Our President, C. M. Hayes, has had years of experience as an officer of Photographers' Associations, and is working with the end in view of making this a convention from which the members will derive the greatest amount of actual benefit and useful knowledge.

Francis Paulus, Director of Detroit School of Art, will lecture one day on "Master-Pieces of Light," and another day on "Hands," how to naturally and properly dispose of them in a picture. Professor Griffith will tell us about "The Uses and Abuses of Back-ground and Accessories." There will be plenty of practical demonstrations, among which we are promised the following by experts in each line: X-Ray Photography, and how it can be utilized by the photographer for profit; Carbon demonstrations, by T. J. Courtney, Manager of the American Autotype Company; Aristo Platino, by Harry Fell, of the American Aristotype Company; Platinotype paper, by Willis & Clements.

The three days will be brimming full of pleasure and profit. The Hotel Victory is an ideal place for conventions and everything possible will be done for our entertainment. The manager will give the association a steamer excursion around the islands, accompanied by the hotel orchestra. The hotel rates to those attending the convention are $2 to $4 per day, but they have agreed to provide everybody who wants them with $2 rooms.

The rates to the island are as low as can be desired; a regular summer tourist rate of about 2 cents per mile may be obtained for the round trip from nearly every point. Ask your ticket agent about it. Leave your hot city work rooms during the dog days and spend the time with us at the cool, delightful island of Put-in-Bay, and you will return refreshed in mind and body, ready to do better work and more of it. Don't fail to send an exhibit, as you know the benefit to be derived from a convention is obtained by direct comparison of your own work and helps make the convention a success.

The prizes are liberal and should stimulate a large exhibition of good work. Our Special Prizes of $50 in gold, and gold and silver medals are offered in order to bring the best work of the United States together for study and comparison.

If you haven't a prize list send for one at once and make entry; there is still time to prepare an exhibit if commenced immediately.

C. S. Bateham, *Vice-Pres.*,
Norwalk, Ohio.

THE NECK IN PORTRAITURE.

By Frank M. Sutcliffe, in The Photogram.

IN a recent article on the above subject, Mr. Sutcliffe says in part :

"If ladies only knew of what great importance the drapery about the neck is to the production of a satisfactory portrait, they would give it a little more attention before sitting for one. In nine cases out of ten the sitter, whether male or female, hides his or her neck with a collar—a collar which rests on the shoulders and reaches to the chin. This collar prevents any movement of the head. Now, as gracefulness depends on subtle and delicate movement, the photographer who tries to make his sitter appear natural, meets with an obstacle in the shape of a collar. If the sitter is slender, there may be room for a slight turn of the head, but if the case is otherwise the photographer, not wishing to give the sitter bodily pain, has to make his picture of an apparently stiff neck. In the case of ladies this stiffness is still further emphasized by the sleeves and shoulders of the dress, which stand up on either side and make the imprisoned neck appear still more a prisoner.

"As the photographer has in most cases to take his sitters as he finds them, let us set to work to find out how to make the best of our sitters' collars and shoulders.

"The first thing we notice is that the nearer the camera is to the sitter, the more apparent and objectionable do the high shoulders and tight collars appear. Therefore, when a bust portrait only is wanted, the photographer's work is really more difficult than when the whole figure is included. When the sleeves are high and the camera near to the sitter, it is seen that, when the shoulders are turned away from the camera, the sleeve hides much of the shoulder and sometimes hides part of the face ; we must then, if the sitter appears to be all shoulder or sleeve, turn her more round to the camera. Here another difficulty crops up. The immense buttons on the dress, which before showed only their edges, now appear like a row of full moons. Consoling himself with the thought that the retoucher's knife can remove their brightness, the photographer has to decide whether the shoulders and neck look better when the sitter is seated or standing. If the neck is long and the shoulders sloping, in most cases it will be found better to ask the sitter to be seated, but if the neck is naturally short and the shoulders well made, it is well to take the sitter standing. Many people, too, appear more animated when standing than when seated. Some full-blooded people seem inclined to snatch forty winks when comfortably seated in the photographer's chair. In the early days of photography people did occasionally go to sleep during the long exposures. When the sitter stands there is less fear of the chin doubling, but double chins can be avoided by allowing the head to lean forward. This plan is sometimes the only possible one with sitters whose noses incline upwards and whose chins are inclined to become doubled.

(*Concluded in September issue.*)

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Photographed by E. B. Core.

ANTHONY'S

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EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D.
W. I. SCANDLIN.

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GENRE PHOTOGRAPHY.

THE question frequently comes up in these latter days among a certain class of photographers as to why genre photography should receive so much attention as it does at our State and national conventions, and, in fact, among many photographers, as to what the word "genre" means anyway. A little quiet study into its meaning and a glance at its value as a part of the legitimate training of the portrait photographer will do no harm and may render more difficult the capture of the grand prize at the next convention. If it does this, this article will have served its purpose, and the art of photography will have been advanced by that much. In the first place let us start with a correct pronunciation of the word, which is from the French, and which, as Funk & Wagnall's Dictionary tells us, should be pronounced as if spelled zhān-r. The same authority defines the word as "a style of painting or other art illustrative of common life." Now, if we take the words "common life" to mean the life of common people, we have at once a reason for the practice of genre photography in the portrait studio, for it is the common people we are called upon to portray in our regular studio work, and, further than that, the more nearly they are shown in their natural poses and characteristics, the attitudes common to them and those familiar to their friends, the more successful will be our portraits of them. We believe, therefore, that every possible attention should be paid by the professional photographer to the cultivation of the art side of his work as represented by genre study. That composition which tells the story of common life most truly and pleasingly is the one in which all the elements contained go to make a harmonious suggestion of one principal *motif* or idea. The model, arrangement of dress and accessories, pose, action and lighting, must each tell its own part and lead up to the complete picture. Simplicity, suggestion, harmony, are all-important in a composition of this kind. Simplicity, that overcrowding may be avoided and the attention not detracted by multiplicity of detail, which ends in confusion, loss of inter-

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est, weakness and failure. Suggestion of *motif* rather than elaborate display of accessory, and perfect harmony between all parts of the composition, so that no false note may be struck. If, for instance, the picture is to illustrate a colonial incident, the history of the times must be an open book to the photographer, so that nothing in the way of costume, furniture or accessory may be used in the composition which is not a counterpart at least of those actually in use at the period and in the country illustrated. Nothing can be more absurd than to see a picture, which, by its title and leading features, is evidently supposed to represent life in revolutionary times, in which, for instance, a musket on the wall that should be of no more modern make than the flint lock of that time is, however, plainly a rifle of the time of the Rebellion. Mistakes as glaring as this are constantly to be found, and, wherever present, render the picture valueless as a work of art. A false note of this kind jars upon the sensibility of the observer and creates a bad impression at the outset, whereas a good composition grows upon one and improves with acquaintance. The production of good genre photography presupposes a wide knowledge of life, the most careful study of the subject to be illustrated, thought and experiment in lighting and posing, and intelligent effort all along the line. Practice of this kind stimulates interest in the routine work of the studio, quickens the perception of the operator, trains his eye and intellect and makes him better able to interpret the characteristics of his sitters as they come before his camera. Our regular studio work will improve as we go on telling the story of every-day life, with careful regard to the broad principles that underlie genre photography, holding to simplicity, harmony and truth, and the real value of the grand prize in this class of competitive photography will be more highly appreciated from year to year as the standard of work on which it is awarded improves. An important incentive to improvement will be found when the Association of America establishes some day, as we believe it will, a national gallery of photography, in which may be collected the best work of the best men in this most important branch of art.

* * *

To Print on Canvas.—Carefully wash the canvas in several changes of warm water and float it for two minutes on a solution of—

Salt	10 grains.
Ammonium chloride	10 “
Ammonia	15 drops.
Water	1 ounce.

After drying, sensitize by floating for two minutes on a bath of—

Silver nitrate	150 grains.
Water	1 ounce.

After again drying in darkroom, print deeply and tone the same as an ordinary albumen print.

* * *

For obtaining prints on gold or other metallic surfaces, the best method is to make a carbon print and transfer it to the desired support. Full directions will be found for this in any of the carbon instruction books.

Items of Interest

A PRACTICAL movement against the disfigurement of landscapes has been inaugurated by the Twentieth Century Club of Boston, Mass., which, through its Art Department, has offered a prize of $25 for the set of twelve photographs that illustrate most effectively the harm resulting to the beauty of the Massachusetts landscape by the glaring advertisements which are so numerous. The photographer is asked to submit with his prints such information as he may regarding price paid for the privilege of advertising, and opinions of others living in the neighborhood as to the objectionable or other features of such advertising. Prints and information are to be sent to the Club at No. 2 Ashburton Place, Boston, by October 1st. It is to be hoped that this movement, which is the first organized effort of the kind that has come to our notice, may be followed by similar ones in other States, and may have the hearty co-operation of every photographer in the country. It is high time that something was done to stop the defacement of the natural beauties of our scenery by glaring advertisements of soaps, pills and polishes. The Bulletin will gladly announce the efforts of clubs or individuals in other parts of the country who desire to further this project.

* * *

The retirement from active work of Mr. E. Decker, of Cleveland, O., removes from the profession one who, in his long business career, has earned an enviable reputation as an artist and business man of high attainments. The Decker studio has long been known for the high class of work it has produced, and, in the hands of Mr. Decker's successor, Mr. George M. Edmondson, may be counted upon to maintain the standard it now holds. Mr. Edmondson has been associated with Mr. Decker for several years past, and has demonstrated his fitness to carry on the work which Mr. Decker lays down. As Vice-President of the Photographers' Association of America, Mr. Edmondson is well known to the profession, and his achievements will be studied with interest in the near future.

* * *

Announcement is made that, with the August issue, *The Practical Photographer* and *The Junior Photographer*, both of which have been published in England by Messrs. Percy Lund, Humphries & Co., will be amalgamated and published monthly under the name of *The Junior Photographer*. These journals have found a wide field of usefulness, which we do not doubt will be well filled by the new publication.

Reports are still coming in that tend to show the important results of the photographic record work connected with the sun's eclipse of May last. Many of the negatives made at that time in far distant parts of the globe are probably still undeveloped, but enough have been secured to assure an important addition to our fund of eclipse data, while many of those not yet reported will undoubtedly prove of great value. Mr. and Mrs. Maunder, who achieved success beyond the ordinary in the previous eclipse, are said to have been equally fortunate in their work on this occasion.

◆

Professor John Trowbridge, Director of the Physical Laboratory of Harvard University, has been lately conducting a series of experiments in radiography, with a storage battery of great power, made up of 20,000 cells, which affords a constant pressure of 40,000 volts, and is said to be the largest battery of its kind in the world. Professor Trowbridge has obtained traces of the ligaments and muscles of the body, and feels confident that he will succeed in producing satisfactory photographs of them at an early day.

◆

The Virginia and North Carolina Photographers' Association has just finished a very successful convention held at Richmond, Va. The attendance was large, the meetings enthusiastic, and the art exhibit excellent. The following officers were elected for the coming year: President, M. L. Clarke, Richmond; Vice-Presidents, C. P. Wharton, of Raleigh; C. E. Cheyne, of Hampton, and S. L. Alderman, of Greensboro; Secretary, Waller Holladay, of Durham; Treasurer, R. W. Holsinger, of Charlottesville; Trustees, A. H. Plecker, of Lynchburg; W. E. Eustler, of Danville. Raleigh was decided upon as the next meeting place, the Executive Committee to fix the date.

◆

Steps were taken at the annual convention of the Photographers' Association of America, held at Milwaukee last month, to organize an association which will be known as the Kentucky and Tennessee Association of Photographers. Mr. Doerr, of Louisville, Ky., was elected temporary President; Mr. McNinville, of Nashville, Treasurer, and Mr. McLean, of Henderson, was elected Secretary. The object of the Association is to promote and encourage the art of photography and to give Kentucky State and Tennessee a better representation in the larger Association. Success to the new Association.

◆

The photographers of Washington, Idaho and Oregon are preparing to hold a grand convention at Portland, Ore., October 25th, 26th and 27th, next, and propose to form an association which will embrace this entire section, and which will be known as the Pacific and Northwestern Photographers' Association. A large number of prints have already been secured for complimentary exhibit, and a good programme has been laid out. The officers of the Association are: F. G. Abel, President; J. S. C. Aune, Vice-President; John W. Tolman, Treasurer, and Charles Butterworth, Secretary. The enthusiasm already shown and the efforts put forth by the officers speak well for a most successful convention.

* * *

A school and experimental station for photography is to be opened at Munich, Bavaria, on the 1st of October, under the auspices of the Bavarian Government, the Common Council of Munich and the Association of Photographers' of South Germany. This school requires a course of two years of study, and its object is primarily to advance the cause of artistic photography.

Sir G. H. Emmerich, editor of the *Journal of Photography*, will be at the head of this school. Full information concerning the movement may be obtained by correspondence.

* * *

An interesting demonstration of the latest method of electric lighting in connection with photographic usages was given by B. J. Falk at his studio in the Waldorf-Astoria last month. The system in question has been in use in London, England, for a year or more, and with absolute success. It is a radical departure from the methods now in vogue, inasmuch as the incandescent instead of the arc light is used. The results, as shown by photographs in Mr. Falk's possession, are equivalent to those taken by sunlight in the matter of sharpness, lighting, roundness, and detail.

The apparatus consists of what may be termed an electric umbrella, the interior of which is lined with twenty-five incandescent lamps of a normal power of 100 candles each. By an ingenious arrangement this umbrella can be adjusted at any desired angle, and the light which is emitted from it is tempered with the aid of screens. At the moment of exposure, additional voltage brings the radiance of each lamp up to 200-candle power, the result being a flood of clear white light that is responsible for the resultant effects. The time of exposure varies from one to three seconds.

Ordinarily electric light pictures are characterized by a pallid, and, in some cases, weird, quality that is the reverse of pleasant, all of which is absent in the case of the incandescent light pictures, however.

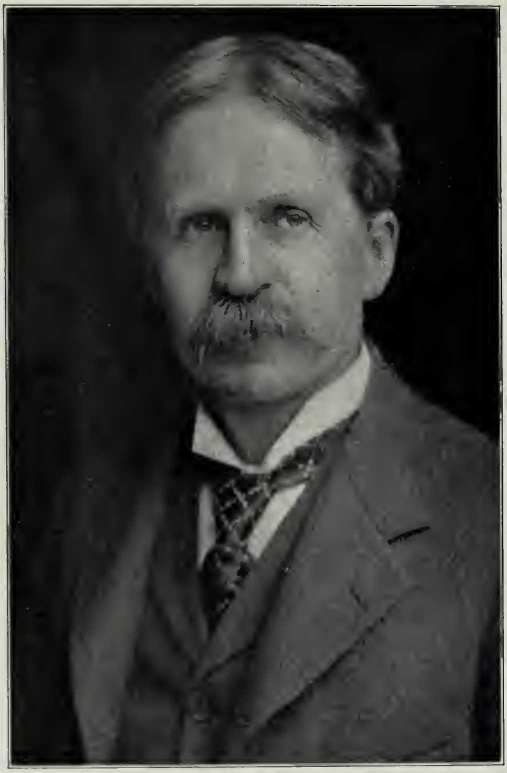
Mr. Falk believes that there is a large and permanent future for this system of lighting.

* * *

The Bulletin would, with due modesty, call attention to the fact that, notwithstanding the distance between Milwaukee and New York, and the time occupied in transmitting the Convention reports, the August number, containing full reports of the Convention proceedings, was published on the 4th of August, just eight days after adjournment, including Saturday half-holiday and Sunday. This feat has not, to our knowledge, been equalled by any of our contemporaries, and we claim the right to be justly proud of the achievement. The promptness and accuracy of the official stenographer, Mr. Douglas A. Brown, had much to do with making this possible, as under his hand the ordinary work of the editor was minimized.

PRESIDENT-ELECT E. B. CORE.

THE accompanying portrait of Mr. E. B. Core, of New York, who was at the Milwaukee Convention unanimously elected President of the Photographers' Association of America for the coming year, will not be new to most readers of the BULLETIN, for Mr. Core is known to photographers from boundary to boundary of this country.



His reputation as a business man and photographer is an enviable one, and his easy grace and dignity are as well known as his features. That his fellow-workers will support and assist him to make the Convention of 1901 at Detroit as great a success as the one just held, is a foregone conclusion. Our congratulations to the Association on the choice of so able a man.

◆

THE Northwestern Photographers' Association will hold its annual Convention at St. Paul, Minn., September 4th, 5th and 6th next; the New England Photographers' Association will meet at Boston, September 12th, 13th, 14th, and the Association of Missouri at Kansas City, September 19th, 20th, 21st. These organizations are working hard for success, and are accomplishing a vast deal of good in their several sections of the country. The earnest co-operation of every photographer in their several domains should be accorded them.

COPYRIGHT AND THE AMERICAN PHOTOGRAPHER.

THE following very clear statement of facts that should be of vital interest to every photographer in America, comes to the BULLETIN, with the subjoined letters, directly from the hands of the Copyright League, and is submitted to the fraternity as most excellent matter for reflection and for action upon :

"The American photographer, as a rule, is keenly appreciative toward any movement which promises him an advantage in business. The growth and importance of the State and national photographic associations are practical evidences of his earnestness in seeking business success. In his business methods, in his enterprise, and in his professional ability he easily outstrips his European fellow-professional as we have known him in Germany, France and Great Britain.

"But with all his alertness and progressiveness he has almost completely overlooked a business advantage which, of all others, he should be the first to perceive and grasp. We refer to his strange apathy concerning photographic copyright.

"In no other country are pictures and illustrations so popular or so important a feature in everyday life as in America. Illustration is, in fact, universal. The daily and weekly papers, the periodicals, and printed matter of every sort with which we are literally deluged at every turn, depend largely for their interest upon illustration. Portraits of prominent people and scenes, pictures which interest as news records or by their pictorial attractiveness, records of incident and life at home and abroad, in-doors and out of work, and sport, of humor and pathos—all these are sought for, gathered in, and published far and wide by every conceivable method of reproduction. The public demands pictures, and the public pays for them. But who makes the pictures and who profits by their sale? Here are two plain questions. Let every photographer answer them for himself, and we are sure of his interest hereafter in the question of photographic copyright.

"A glance at any illustrated paper will show that the photographer bears the burden of the public demand for illustrations. Nine-tenths of the pictures published in our newspapers and periodicals are direct reproductions from photographs. In how many instances does the photographer profit by this use of his work? We venture the answer, not in one instance out of ten. Why should he not profit by this use of his work? If he equips himself for its making, if he produces by his skill something which has salable quality, should be not be the first to profit by his skill and labor? Does the publisher furnish his paper to the public without money and without price? Why should the publisher profit by selling the photographer's work, and the photographer be content with 'glory'? Does the publisher pay the photographer for the use of his productions? Sometimes, when he is compelled to do so ; never, if he can avoid it. Why? Because the photographer has not yet learned to appreciate the value of his work to the world—its plain matter-of-fact value to those who purvey news or information to the public.

"These things are worth thinking over. By availing himself of the protection of copyright the photographer may secure for his own benefit certain legitimate profits arising from his business which at present he permits to go to waste, or, rather, to go for the enrichment of other business men who can turn his product into hard cash.

"It must not be imagined that we impute any blame to the publisher. As a business man it is his chief interest to get and reproduce what the public will buy. If he can get his materials without cost, so much the more profitable will be his business. The mistake lies with the photographer, who is so careless of the sources of income or profit rightly belonging to his business. The remedy lies in a better appreciation of the advantages of copyright and in united action to secure these advantages. If it is found that the photographer is not properly protected by copyright laws at present existing—as is, indeed, the case —there is all the more need for photographers to unite in the effort to secure proper legislation.

"We believe that as soon as the American photographer looks squarely at this question of photographic copyright he will perceive its obvious advantages and insist upon his reasonable rights. Therefore, we urge again, as we have urged before, that photographers should enroll themselves as members of the Photographers' Copyright League, and put themselves in touch with the work this league is doing for their benefit and advantage. All that is necessary in order to secure this membership is to send a request to be enrolled, with your name and address, to the Secretary of the League, Mr. Charles E. Bolles, 244 Fulton street, Brooklyn, N. Y.

"The following letters, which we are happily permitted to publish, offer interesting facts supporting what has already been pointed out concerning the practical advantages of copyright to the photographer:

"(Signed) PHOTOGRAPHERS' COPYRIGHT LEAGUE.

"WALDORF-ASTORIA, NEW YORK, August 10, 1900.

"DEAR MR. EDITOR:

"The accompanying letter from Mr. Elliott, senior member of the well-known firm of Elliott & Fry, of London, should open the eyes of American photographers to the unfairness of our present copyright laws and to the practical benefits accruing to the profession when its members stand together for mutual protection, as they do in England. In no other country of the world do the laws make it so difficult for the photographer to protect his work as in this free land of ours; in no other country is it so easy for the pictorial pirate to steal our labor and go unpunished. The supine indifference of photographers to this state of affairs, and the financial loss they thereby incur, must be quite as amusing as it is profitable to the publishers who thrive upon the photographers' work.

"Sincerely yours,

B. J. FALK."

"HADLEY HOUSE, BARNET, ENGLAND, July 24, 1900.

"MY DEAR MR. FALK:

"I have to thank you for your kind and interesting letter of March 19th, and should have answered it earlier, but hoped to be able to tell you that the new bill that is before Parliament had become law. The committee that is sitting on it in the House of Lords has, however (last night), postponed all further action in the matter until next session. In the meantime I am very well contented with the existing state of affairs. Our Photographic Copyright Union, of which I am proud to be the founder, is working well. We met great opposition from the press the first years of its existence, but by continuous fighting and winning some good actions we meet now with no serious opposition. Whenever a newspaper or magazine proprietor or other person wishes to reproduce a copyright photograph he first applies to the proprietor for permission to do so, and pays a minimum fee of half a guinea; if to be reproduced large size, or if it be an important subject, he pays from one guinea to ten guineas, for the privilege, though 10*s.* 6*d.* is the usual fee.

"The following figures will show you that I have done exceptionally well the first half year with copyright fees:

"January,	1900	£294
"February,	"	276
"March,	"	502
"April,	"	289
"May,	"	360
"June,	"	283
		" £2,004

"From the above you will see that I have made just over £2,000 by my copyrights in six months. Of course, this is partly due to the war in South Africa. I have the best series of generals and war portraits extant, and I have made about £500 by one portrait alone, that of Major-General Baden-Powell.

"And now as to the future. I think I told you when I saw you in New York that, up to the eve of my starting for Japan, two and a half years ago, I was engaged with others in drafting a new copyright bill. It was taken up by Lord Herschel. He went to America and died there, and the bill was never heard of more. Next a bill was drafted by the Royal Academicians, which was totally against the photographers, but why we never could tell, except that so-called artists are jealous of us, and, besides this, a man, who shall be nameless, the manager of a very large sweating London publishing business, had a principal hand in drafting the bill. He is one of those persons who like to have the use of other people's photographs for nothing if possible. This bill was introduced into Parliament, and was referred to a select committee in the House of Lords. It is called Lord Monkswell's bill, and, of course, we photographers fought it tooth and nail—I, among others, gave evidence before the committee. The Photographer's Copyright Union got every amateur photographic society in the kingdom to petition against the bill, and the Union did other excellent work, with the result that during this session the bill has been redrafted entirely in the photographic interest.

"Photography is put on a par with painting, etc., in fact, it is alluded to as a "fine art." The term of copyright is for life of the photographer, and for thirty years after death. The photographer is proprietor of the copyright, whether paid for taking the picture or not, only in the case of payment the photographer cannot make use of the photograph in any way without the consent of the person who gives the commission, until after his death. But the principal feature in favor of the photographer is that it does away entirely with registration—the bill is a model of conciseness and simplicity. It has been read a second time in the Upper House, and has been sent to Canada and Australia for the approval of the Colonies, and there is every prospect of its becoming a law next year.

"In the meantime, as I said before, we are going on here remarkably well. I wish I could compliment you on the way you are going on in America. Anything more deplorable than your description of the state of law of copyright with regard to photography it is difficult to imagine, and I can only sympathize with you with all my heart.

"Hoping for better things for you in the future, and with kindest regards, I am,

"Yours, very sincerely,
"(Signed) Jos. J. Elliott.

LEAKY ROOFS—THEIR REPAIR AND PRESERVATION *

A CORRESPONDENT was replied to in the Answers column last week on a subject that has always been a source of trouble to professional portraitists, namely, the making and keeping of the studio in a water-tight condition. The querist said, "I find the usual way of puttying and painting lasts only a little while, and then lets the rain in." Now, nothing conduces so much to an unsightly appearance in the interior of a studio as a leaky roof and its concomitants, stained and discolored blinds and curtains. Much time and money are frequently expended in remedying the evil, but it is often found that, after a very brief period, the state of affairs becomes very much as before, and this seems to be the substance of the complaint of the correspondent who wrote us.

This subject has more than once been dealt with in these pages, and the reason why we again refer to it is because now, or will be shortly, is the best season of the year to deal with the trouble, as the necessary work can be the better done when the woodwork is dry and shrunken with the hot weather than when it is in a moist and expanded state, as it will be after the wet season has set in.

One of the most fertile sources of leaky studio roofs is the lack of stability in the sash bars themselves, so that they give under the pressure of a heavy wind, thus causing the putty, after it has become hard and lost its elasticity, to crack and separate from the glass, or from the wood or iron, as the case may be. Wood, iron, and even glass will yield, but hard and dry putty will not—that breaks, Too often, particularly in the case of the more ancient studios, which were built with the view of admitting the greatest possible amount of light, the sash bars—both roof and sides—were unnecessarily slight; so indeed they are in some modern ones. Where

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* *The British Journal of Photography.*

that is the case, it may happen that repairing will, instead of mending matters, make them, after a time, worse rather than better, because the weight of the painter on the roof may cause the bars to bend sufficiently to separate the hardened putty from the glass on the under side. This will not be manifest to the eye, and the applied paint on the outside will not remedy the injury caused, hence the water will eventually find its way through.

The first thing to be done in rendering a roof sound and lasting is to make the sash bars absolutely rigid and unyielding. This is best done by affixing, laterally, on the inside, two or more, according to the length of the sash bars, bars of tee (T) iron. As this form of bar has great strength and rigidity, it need be but small, hence it will stop off but little light. That being done, all the old putty that has become hard and cracked, or loose, should be "hacked" out and thoroughly cleared away. Next a coat of thin paint should be given. The paint should be so thin that it will run, or penetrate, between the glass and putty on the under side if that has separated from the glass. Then a second coat should be applied after that has dried. After this has become dry, the new putty, which should be made of the best linseed oil, whiting, and a little white lead, must be put on with good pressure, so that it is forced well between the glass and the bars. Finally, after the work has stood for a few days for the putty to harden somewhat on the surface, a couple of coats of tolerably thick paint, made with the best white lead and linseed oil, with a minimum of dryers, should be given. A comparatively slow-drying paint is better than a quick-drying one for this purpose. In this way a sound roof will be obtained. We may here give a practical hint: It is that it is not always advisable to have the work done by "contract," as then the requisite time, and quality of material, is not always expended upon it so as to ensure a durable result.

A sound roof having been obtained, the next consideration is the best means of preserving it in that state. The best way to do that is to, every six months or so—say spring and autumn—lay on a fresh coat of good paint, even if the work does not seem to require it for the time being. If this were periodically done, we should hear less of leaky roofs than we do. A photographer we knew, always towards the end of the summer, made it a practice to have a coat of thin tar, to which a little tallow had been added, applied warm, or while the sun was upon it, to the outside of the sash bars of the studio as a means of keeping the roof water-tight, and this it did effectually.

Some weeks ago we reproduced, from the *Camera Obscura*, a formula for a cement to take the place of putty for studio roofs, that looks well in theory. It stands thus: Tear ordinary newspaper into small pieces, place in an enamelled vessel, and cover it with caustic potash lees; boil it, and add, with constant stirring, one-third the quantity of turpentine; thoroughly mix, and keep the solution hot; then add the following ingredients, which must also be dissolved in boiling turpentine:

Ordinary pitch	10 parts.
Resin	3 "
Gutta percha	10 "
Wood tar	2½ "

The solution should be well stirred, and boiled until it becomes a thick paste, and then it should be used while still warm. It is scarcely necessary to tell our readers that this composition is highly inflammable, and therefore its preparation should be conducted out of doors. The claim made for this composition is that, being somewhat elastic, it gives with the unequal expansion and contraction of the glass and the sash bars.

We have said that this formula reads very good in theory, but we cannot say how it would answer in practice. We should ourselves rather adhere to the old and well-tried putty system, with an occasional coat of paint, taking, of course, the precaution that the sash bars are made sufficiently rigid, in the first instance, to withstand the pressure of the strongest gales without their yielding. Without that condition we consider that nothing will render a studio lastingly water-tight.

THE GOLD-TONING BATHS.

By Prof. Namias.

THE replacing of silver, the producing agent of the picture, by gold, effects the toning of a direct print. A chloride of gold solution, without any addition, may be used for toning, but is by no means suitable, because it attacks the picture too much. The additions to the chloride of gold solution are particularly for the purpose of turning the trichloride of gold into monochloride of gold, because, although very slightly soluble, it remains in the very diluted solution, which we use for toning, and is much more noticeable in presence of certain alkalies. The changing of the trichloride into monochloride takes place under complete discoloration of the liquids, which at first, according to the quantity of trichloride it contains, is more or less yellow.

According to the alkaline salts or the substances which are introduced into the trichloride of gold solution, and, according to the time in which the bath is left to itself after the addition of these substances, the change of the trichloride into monochloride is more or less complete, and it is doubtful whether it would ever become complete, if substances of reducing action, like sulphite, hyposulphite, formiate, had not previously been put into the solution.

The gold toning baths we can divide into four classes:

1. *Acid toning baths*, which we obtain simply by solutions of the trichloride of gold (½ to 1 g. to 1,000), which is always a little acid, in distilled water, and eventually by addition of a few drops of muriatic or acetic acid. Such baths are durable for a pretty long while, but they attack the picture too much, as before mentioned. They are only useful when very sharp prints are to be toned.

2. *Neutral toning baths.*—They are obtained by complete saturation of the free acids of the trichloride of gold with an insoluble oxide or carbonate of earth alkalies. Carbonate of calcium, carbonate of magnesium and magnesia are therefore suitable. Oxide of zinc, although a metallic oxide and not an earth alkali, is also suitable. Ordinarily only carbonate of calcium (chalk) is used for the preparation of the neutral bath.

The neutral baths are less durable than the acid ones, but more durable than the alkaline baths. The reduction of the trichloride to monochloride takes a much longer time and is incomplete. These baths attack the pictures more than alkaline baths, and furnish generally less agreeable tones.

3. *Alkaline toning baths.*—They are obtained by addition of an alkaline carbonate, bicarbonate, or of soda or potash of alkaline reaction to the trichlorides of gold. These baths have little durability; in a short time the reduction of the trichloride into monochloride will take place, but the reduction products of the gold salt will begin to precipitate after a little while, and are generally not held back, because the alkaline salts, which have no reducing action, may cause the deposit of metallic gold.

Borax, to which fine boracic acid is added, is generally used. It is a particularly weak acid, which will impart no sharpness to the solution. But if acetate of soda is taken in its place, acetic acid is liberated. This in the beginning neutralizes the alkaline solution, but later makes the bath acid and prevents a good tone. If, in view of this the acetate of soda is applied, it is useful to add gradually to the bath a pinch of soda, which will keep it alkaline and still prevent the picture from being attacked too much in toning. The same can be said of the baths prepared with phosphate of soda. Very seldom, and only when a bath has to be prepared quickly, should an alkaline carbonate (carbonate of soda or potassium) be applied in the gold bath, because the carbonates effect a sudden decomposition of the gold salt, and the bath will change accordingly. Ammonia or carbonate of ammonia cannot be used as alkaline substances, because both will secrete the gold in the form of an ammonia double salt or fulminating gold. Carbonates or bicarbonates of the alkalies are also added to such gold bath as contains an ammonia salt (for instance, sulphocyanide of ammonia), because an ammonia carbonate will form, which will act upon the precipitated gold. This is the result of my experiments.

No matter what the condition of the alkaline bath that is used for toning, it is well to leave the bath standing, until the reduction of the trichloride to monochloride has been finished. The time varies according to the applied alkaline salts, but it can be prolonged if the bath is left standing from ¼ of an hour to not more than 3 hours; for soda ¼ of an hour is sufficient; for bicarbonate of soda, and borax ½ to 1 hour; for acetate of soda 1 to 2 hours. In each case the complete discoloration of the solution is proof that the change has taken place.

If the bath is left standing too long, it will secrete monochloride or compounds of the trichloride with alkalies.

The gold baths belonging to Class 3 are not very durable, and are mostly applied, because they furnish a better tone. The tone changes generally with the alkaline salt used, but the differences may be less, than is generally asserted. We also believe, that the difference originates not so much from the influence of the acids of the soda salt, which is applied (carbonic, boracic, acetic, phosphoric and Wolfram acid), as from the degree of reduction, to which the trichloride of gold is exposed with the different salts. In fact, if baths prepared with the different acid salts (borates, phosphates, acetate of soda), which were left standing until the first precipitate was observed, are applied, tones will be obtained which will differ very little from those of the chloride of silver gelatine—or albumen papers, so that they are easily mistaken for one another.

The durability of the toning baths increases remarkably by the addition of a small quantity of chloride of sodium without any injury to the toning.

4. *Toning baths with reducing substances.* These baths have been recently recommended as standing baths, and may be of good service sometimes. They contain an alkaline salt of a reducing acid, and the purpose is, therefore, to make the reduction of the trichloride to monochloride more complete; they are therefore less durable than the

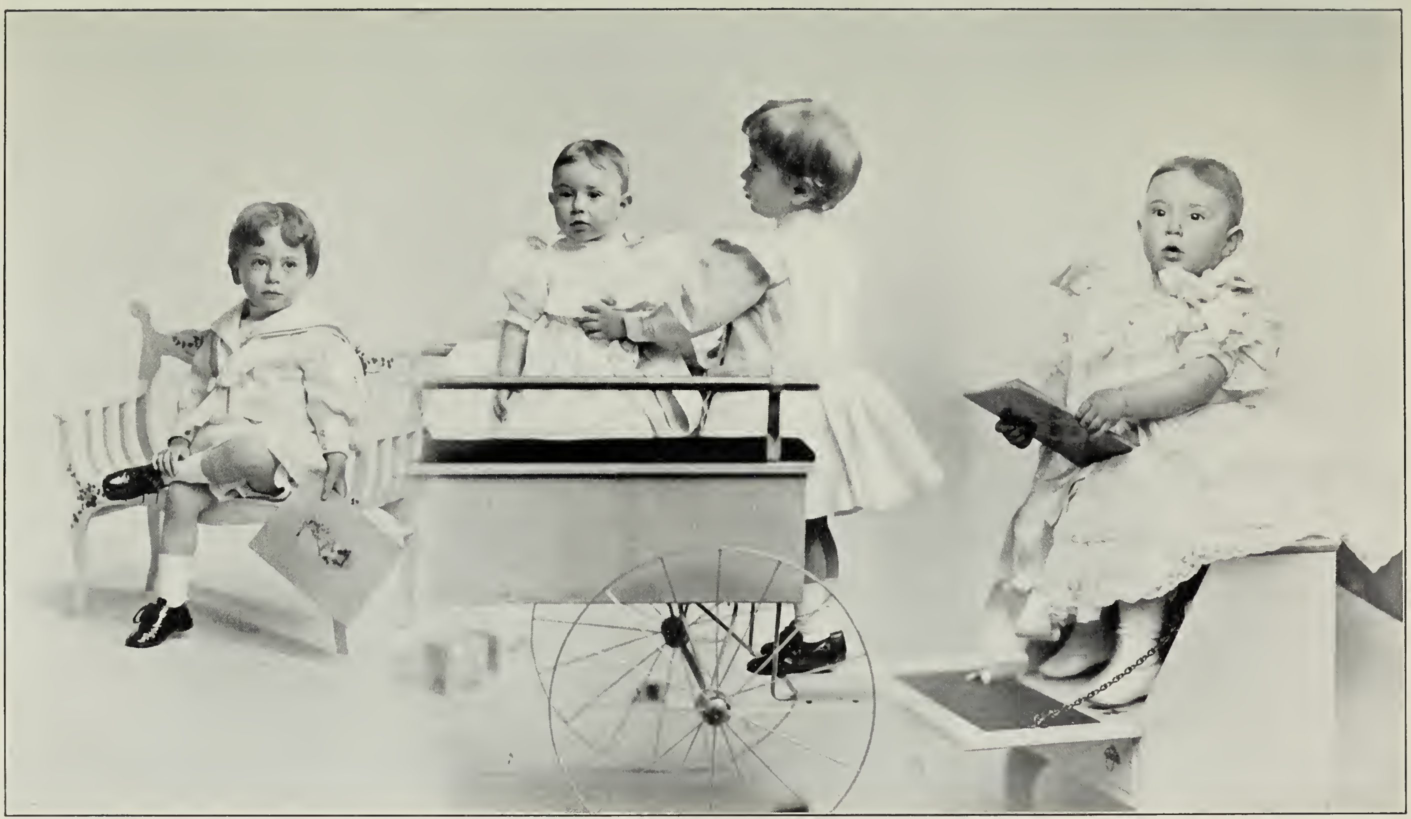
previous ones. The reducing salts which are applied, are particularly sulphite and formic soda; the former discolors the trichloride solution instantaneously after the reduction takes place; the sulphite has to be applied in a quantity, which is just about sufficient to reduce the trichloride to monochloride, because the remaining excess acts detrimentally to the toning or stops it entirely. The putting together of sulphite and trichloride of gold appears strange, and indeed, in the excess, which is not necessary for the reduction of the trichloride to monochloride, they act upon each other and furnish a bath, which for a long time secretes no gold nor reduction products. It may be said that a soda gold sulphite forms, which is constant and does not become decomposed, even in presence of the silver in the picture, so that it is not suitable for toning.

The formic salt is also an energetic reducer; a bath with formic soda is colorless after five minutes and can be used in half an hour, but it will commence to precipitate metallic gold. It furnishes handsome dark tones, and is therefore in certain cases very much to be commended, but generally it is not suitable. The reaction between the trichloride and the reducing salts is analogous to the above; only the oxygen oxidizes the reducer instead of volatilizing and forming hypochloride. Other alkaline salts of organic acids (citrate, tartrate, lactate) exercise a more or less considerably reducing action, but in each case less than the formic acid salt. The alkaline oxalates have a too-energetic reducing action and cannot be applied, although they reduce rapidly the trichloride to metallic gold. The hyposulphite, although it is an energetic reducing medium, cannot be applied in large quantities, as its use in this way results in the formation of tone-fixing baths.

An alkaline salt, which acts in quite a peculiar way, is the sulphocyanide of potassium and ammonium. If a solution of sulphocyanide of potassium or ammonium is poured into a trichloride solution, a red precipitate of sulphocyanide of gold will form, but if the addition of sulphocyanide is continued, the precipitate will dissolve completely and the liquid becomes colorless. It remains an open question, whether in this case a double sulphocyanide of the gold and ammonium or of the gold and the potassium forms. Perhaps a partial reduction of the tri- to the mono-chloride takes place. It is, however, a fact, that the toning baths prepared with ammonium sulphocyanide, furnish a good tone without attacking the picture more than the other tones. They have the great advantage of keeping for many days without secreting any reduced gold compound, and the durability is still greater, if the bath is kept in the dark. It requires, therefore, a larger quantity of gold than the other, to furnish handsome tones, and, besides this, we have observed that not all the gold which we add, deposits upon the pictures. These pictures with sulphocyanides are used by many for the reason, that they give a shade which differs sometimes in the half tones and the shadows.

Translated by

HENRY DIETRICH.



By E. B. Core.

CHILD STUDY.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

THE NECK IN PORTRAITURE.

(*Concluded.*)

"It is interesting to note that the head of the sitter may be made to appear larger or smaller by the amount of neck and bust uncovered or covered. When the dress is darker than the face, a high collar makes the face appear large; a lady in fashionable evening dress without any drapery over the shoulders has an apparently smaller head than she has in a morning dress, provided that it is a dark one. No doubt the reason why statues appear to have heads of better proportion than the average woman is due to this fact. The reason why a milkmaid or laundrymaid dressed in white or pale blue or pink appears to have a better-shaped head than her mistress is also due to this. When the face and hands are the only uncovered parts of the body and the dress is dark, they catch the eye and appear larger than they really are. White gloves make the hands appear larger than dark ones. These things should all be attended to by our sitters; for if they do not make the most of themselves, how can the photographer be expected to make them appear at their best in their pictures? It is the same with the hairdressing; just now everyone, whether they wish to be taken in profile or not, have their hair arranged in such a way that it looks the best from the side. When the sitter is taken from the front the hair is often hardly seen at all.

"To return to the necks of our sitters, which may be divided into three classes—average, short, and long. For some unexplained reason, people often wish to appear in their portraits otherwise than what they really are. Instead of going to Sandow, or some other expert on the development of symmetry, to have the muscles on their thin necks developed and the excess of tissue reduced from their stout ones, they expect the photographer to do what exercise only can do. The photographer then tries to persuade his sitters to dress in such a manner as to hide, and so leave to the imagination, any peculiarities of form. By means of loose drapery, or even a hat or bonnet-string, a long thin neck may be partly covered in such a way as not to catch the eye, for it is only when peculiarities are allowed to do this that they are objectionable in a picture. If the photographer can emphasize other parts or lead the eye away from those features which are not well developed, then his portrait is considered successful. A skilful dressmaker can so arrange the lines of the dress of even the stoutest woman that her stoutness is not noticed.

"It is a mistake to suppose that a thin neck is made to appear thicker by being covered up; the shape of the opening of the dress has more to do with the apparent thickness of the neck than the amount covered or uncovered.

"One of the most fatal mistakes a lady can make in dressing for a portrait is to have too much clothing on the top of her spine.

"Much depends on the way the neck is lighted, whether it appears thick or thin.

"Much of the dignity and stateliness of a portrait depends on the neck; if this is quite hidden with clothing it is difficult to make our sitters look like queens."

PHOTOGRAPHERS AND THEIR PUBLIC.

THE following article, by Mr. Drinkwater Butt, F. R. P. S., of England, applies to existing conditions in this country no less than in his own, and we reprint it from the *British Journal of Photography*, of July 27th, with this acknowledgment.—[EDITORS.]

Next to the quality of the work which he produces, nothing is of more importance to the professional photographer than the manner in which he introduces it to his public with the object of obtaining their patronage. The following notes on some of the ways in which this matter is approached in actual practice have been compiled by the writer from personal observation of most of the leading London and many of the more prominent provincial studios, and are here offered as an incentive to the further personal consideration of the subject by the profession generally.

There has been reported—I forget where at the moment—the saying of a very successful commercial photographer to one no less eminent in the artistic quality of his work, "You take a first-class picture and a second-class order, while I take a second-class picture and a first-class order." If not apocryphal, this goes to prove that commercial success depends as much, if not more, upon how a man's work is exploited, as upon the actual quality of the work itself, and so, in these days of keen competition, the photographer cannot give too much care, pains and consideration to the manner in which he places his productions before possible clients.

Now, the first and most obvious way of doing this is by the display of specimens in windows and show-cases, and here in practice we find a great variety of methods and results. In some photographers' windows will be seen, year in and year out, just one class and standard of work, with no effort for improvement, and no apparent perception of the advent of new styles and fresh processes. The worker has got into a groove, and so goes on, day after day, producing in endless monotony the "usual thing," and, if you remark upon it, he will generally reply that it has always done very well, and that he has neither time nor money to spend on improvements or efforts to do anything different, especially, as he will explain, now that times are so bad – quite forgetting that they might get better with him if he had some better and more varied styles of work to offer to his customers.

In other places, on the contrary, one finds all the latest processes employed and exhibited, and a considerable variety of work always on view—something, in fact, to appeal to and please everybody; and, although it is, perhaps, at present too much to expect that the general public will always choose that which is artistically and technically the best, yet the fact of its being shown and readily obtainable, will, in time, create a demand for it. In proof of this, it is only necessary to note the facts that, in the better and more prosperous class of studios, the demand for warm, soft tints and matt surfaces has increased with the facilities for obtaining them, and that now carbon and platinotype are slowly but surely ousting the shiny surfaces and generally unpleasing tints of toned silver prints. There is, perhaps, now only one of the principal establishments in London which makes a special feature of enameled work, and even there the warmest possible tone is consistently employed, and, of course, all the other processes are obtainable as desired.

Next to variety of work being a desideratum, experience shows that it needs to be well displayed, and here there is great scope for both judgment and artistic taste In some places, especially where there is plenty of window space, one finds a very large quantity of work exhibited, without sufficient attention being paid to its quality or variety, and examination of some of these multitudinous displays, and comparison of them with others of more moderate extent, produces the opinion that it is very easily possible to have too much.

Among a very large number of pictures, some, at least, must necessarily be of more or less inferior quality, and these lower the general average of the whole effect, besides which, the eye becomes wearied by looking at so many, and some of the best work may consequently escape attention. In the highest class and most flourishing

London and provincial establishments, a moderate show of the best work produced, sufficiently varied, of course, to indicate the scope of the business, seems to be the best and most successful method, and it is usually only in second-rate places that one sees rows upon rows of work, all similar in size and style, and at one universal dead level of monotony. The provincial photographer has often the advantage of his London *confrère* in possessing a moderate-sized and well-lighted window in place of the show-case or two, or badly lit entry, with which the latter has often to be content; but, on the other hand, he has to keep his specimens more constantly varied, as he has not the ever-changing flow of passers-by to see them that the metropolis affords. Every one is fond of pictures, and the photographers windows of small or moderately sized towns are often the objects of regular visits by the inhabitants, and I have repeatedly heard such comments as, "Oh, do come and look; here's a new portrait of Mrs. A.," and "Don't the Misses B. look nice?" and "That's a good picture of Mr. C.," and so on through a whole alphabet of admiration and interest, concluding with, "It's always worth while to come and look at Mr. Uptodate's windows"; and have contrasted them with the "Oh, come along; there's only that old picture of Mr. Mockturtle when he was Mayor the year before last, and old Lady Dowdy and the Misses Asper Usuals. Mr. Dryasdust never has anything fresh in his window," as heard before other establishments. The display of photographs of topical interest is always an unfailing draw, and when we go down Prince Regent street we always stop in front of the Universcopic Company's window to see the latest portrait of General Bullerts, now at "the front," or that of Miss June in the "Bells of London," and so on, and some day we go in to be photographed on our own account, so well has what we have so often seen impressed us.

Another desirable point with regard to window displays seems to be that all work above cabinet size should be suitably framed. Comparison of places at which this is done with others at which it is not results in favor of the former as regards finish and completeness of effect, and the method has also the advantage of not only often bringing to the photographer a profitable trade in frames, but also of enabling him to see that his work is suitably and artistically framed before it leaves his hands, instead of afterwards being entrusted to the tender mercies of the average frame maker, whose ideas are too often limited to some spiky "Oxford" abomination, or an ill-designed combination of fussy and misplaced ornament. Suitable mounting should also receive more careful attention than it very often does at the hands of the photographer himself, who usually keeps but one or two varieties of mounts in stock, and places everything, with but very little discrimination, upon them. This is not the place for an essay upon mounting and framing, but the importance of the proper study of both these means of improving, finishing and setting off our work cannot be too strongly insisted upon in an article on its exploitation. I know at least one London establishment in which the neglect of proper mounting does much to spoil what would otherwise be a good window display. The work is of generally good quality, and mostly printed in platinum; but the greater part of it being done by electric light—and often, doubtless, with a certain amount of London dust and fog in the atmosphere—some of the prints are not as brilliant as others, but all alike are mounted on white cards with fairly wide margins, which, of course, compete severely with the high lights of the flatter pictures, and so produce a generally unsatisfactory and inartistic effect, which is still increased by the fact that the shop front is also of a brilliant white—not a bad color in itself for the painting of photographic premises, but, in the present instance, not going well with the white mounts and many white frames of the exhibited pictures.

This brings us to the consideration of the style and color of shop fronts, and of windows and their fittings, as influencing the impression produced by photographers' works upon their public. The worker, being usually only the tenant of the premises he occupies, has but little control over their architectural features, but, when taking a place, he will do well to choose something not too elaborate, and with not too much polished granite, shining metal or carving about it, all of which will tend to swamp and depreciate the artistic value of his work. Fairly dark and unpolished natural woods form usually the best setting for photographs, both in frames and shop fronts, and the very simple yet effective oak doors and windows designed by Mr. George Walton for the Eastman Company's Regent street branch may be cited as good examples of the right thing. For painted fronts, black and gold is often dignified and unobtrusive, and white of a warm tint in conjunction with a dark Indian red may be sometimes effectively used. For show-cases, hard woods and simple mouldings are always safe, but elaborate carving and metal work are to be avoided. I know one establishment at which the cases are so carved and ornamented with *repoussé* work that it is almost a puzzle to find the photographs concealed therein. With regard to window fittings, the photographer who desires his display to always look well should have two or three different sets of draperies, etc., so that they can be varied to suit and harmonize with the show of the moment. The draperies (by which I mean any necessary curtains and coverings for stands, and not a lot of useless frippery) may be of silk, plush, velvet or serge, of which all tints are obtainable, and, besides these, a few pretty easels and stands are all that is really necessary. The man of taste will avoid quantities of palms, ferns, china monsters, pots and tiles, to say nothing of such things as the stuffed kittens which I recently saw in a photographer's window! Before leaving this part of the subject, it may be just noted that one, at least, of our best male and one of our most patronized lady photographers do without outside display of any kind, conducting their business in what are apparently private houses, in which they receive their aristocratic clients, a dignified and quite professional method, but one not always possible for lesser lights, or for the more frankly commercial side of photography.

It ought to be hardly necessary to insist that whatever specimens are shown should be the actual work of the establishment showing them, but it apparently is so when one finds even good photographers displaying work obtained from other sources; while at the lower end of the scale, I have seen the work of well-known men unblushingly placed outside a very fifth-rate establishment in a London thoroughfare, and we all are familiar with the advertisements of and for specimens which frequently appear.

Other methods of approaching possible sitters are to be found in the distribution of advertisements, circulars and price lists. With regard to the first, it appears to be doubtful if general newspaper advertising is of much benefit to the artist, whose best ad. is the quality of the work sent out bearing his name; but, in the provinces especially, an occasional announcement in the papers under such circumstances as the taking or removal of a business, additions to premises, or of topical reference, or a well-printed and well-worded circular making such things known, may be of advantage. Circulars should be sent by post, enclosed in a good envelope, and addressed in a good hand, with the full names of the persons they are intended to reach. I regret to say that many of the specimens of this class of literature which I have seen have been, not only badly written and ungrammatically expressed, but also very badly and inartistically printed; and such things, sent in a halfpenny wrapper, and roughly addressed, "—— Smith, or occupier," are almost certain to find their way into the W. P. B. (For the meaning of these cabalistic letters apply to the editor. He is used to giving other things besides circulars decent burial therein.) Of the price lists of London and provincial photographers I possess quite a large collection, but very few of them, even those of the best houses, are ideal productions, some being badly printed, some giving too much information, and others not enough. An artistic business should surely have its accessories of an artistic nature, and really good printing is but very little dearer than commonplace, not to say common, work. It is surprising, too, how very few photographers have taken advantage of the possibilities of collotype and the half-tone process for the illustration of their price lists and circulars, though those who have done so have certainly benefited by so doing. A picture or two on a circular or price list may not only lead to their preservation, but also place specimens of the photographer's skill in posing and lighting directly into the hands of possible sitters; and I can speak personally of the benefit of adopting this plan of doing so. The class of price list above alluded to as giving too much information is that in which the photographer appears to have taken a delight in making everything as complicated as possible, and quotes you different prices for vignettes, half lengths, three-quarters, and full lengths; for groups of two, of three, and of more persons; for silver prints, platinotypes, and carbons (not to mention a few processes with barbarous names of his own invention), with extra positions, resittings, further copies, etc., all jumbled up together, until the whole is a maze of words and figures that may well repel the possible or intending sitter. By all means let all desirable information be given, but let it be properly tabulated and clear at a glance. The price list that does not give enough information, is, if anything, worse than the redundant and muddled one, and none is complete that does not clearly state the terms on which business is done, cash or credit, the number of positions taken, and the conditions of resitting. The exact understanding of these things beforehand, and the printed statement of them for reference, would often save much after-friction and trouble.

And here I wish to put before my brother photographers a system by which not only would price lists and business be simplified, but the ever-vexed questions of number of positions, proofs, and resettings be solved. It is to do away altogether with the arbitrary "first dozen" price (which has often the effect, even when the photographs are much approved of, of limiting the order to the said dozen as originally paid for), and to abolish the charges for "extra positions" and "resittings"; putting in the place of all these: "First copies, to any number of desired positions, sittings, or costumes, so much each," and "further copies of any of them, so much each." "First copies to be paid for at the time of sitting, and further copies at the time of ordering." Then the fussy or faddy customer could sit and resit, or come in as many costumes, or have as many positions taken, as she (it is usually she) desired or was willing to pay for; while the photographer would be paid in exact proportion to the work done (and why not, messieurs?); and both the profession and the public would be on a better footing. The writer has used this system with very great success when working for the dramatic profession, and has no doubt that any good photographer adopting it for his general work, and taking a dignified stand upon it, would find it answer equally well. The differences of price for groups of two, three, or more figures might also be done away with, for, although they contain more heads to retouch, the size of such heads is smaller in proportion, and there would then be only the matters of size and printing process to complicate business and the price list. With regard to printing processes, all silver prints, whether in albumen, gelatine, or collodion, might very well be classed together, and carbon and platinotype have but one price in common.

Next after the price list the attention of the would-be sitter is taken by the receptionist, on whose possession of good business ability and tact much of the obtaining of good orders depends, and therefore the importance of the photographer being well served in this department cannot be over-rated. In a lengthened experience I have met with receptionists good, bad, and indifferent, and, while the latter appear to predominate, the former are certainly born and not made. I have seen those who had every detail of the business at their fingers' ends; among these being, curiously enough, a smart little maiden still in short frocks, whom I recently encountered in the reception-room of a fashionable photographer, and others who could not answer the simplest question without reference to book or price list, and were completely non-plussed at an inquiry respecting an enlargement or a miniature. How a photographer's relations with his public are thus affected it is easy to see, and happy is he who possesses a wife or a sister to attend, *con amore*, to this part of the business if he is not lucky enough to have one of the born receptionists above referred to. The desirable qualities are, of course, knowledge of photography and its possibilities, plenty of tact and business acumen, good manners, and a lady-like and pleasing appearance, all of which it is not always easy to find combined in a single individual.

Another thing that has often an effect on the possible sitter is the condition and appearance of the shop or reception-room. Here over-elaborate embellishment and decoration is out of place, as tending to dwarf and swamp the effect of the work, and as giving to some sitters the idea that the prices asked are as much to pay for all the show and glitter as for the photographs they will receive; but these interiors should be quietly pleasing and unobtrusively artistic in effect; well lighted for the easy examination of specimens ; fitted with comfortable seats and conveniences for waiting sitters and their friends ; and, above all, perfectly orderly and spotless in their cleanliness. It should be superfluous to write the last clause, but judging from some places I have recently seen, and those not of the lowest class, it apparently is not so to offer such advice to some practitioners. When the specimens shown become soiled, or in any way *demodé*, they should be at once destroyed, as a faded or damaged print is doing more good among the residues than on the reception-room walls ; and anything like litter or lumber should be scrupulously avoided. If possible, no work of any kind except the book-keeping should be done in the shop. There is an old saying that children and fools should never see things until they are finished, and without insinuating that those of a photographer's clients who have outgrown the first category are to be placed in the second, it is more likely that they will be pleased with work which they first see only in its completed condition, than if they behold it in any of its crude initial stages.

This, I think, also holds good with regard to the sending of proofs, which, if perfectly finished photographs, are far more likely to obtain good orders than the unretouched, untoned, and untrimmed prints which some photographers place before their clients. If the system of charging so much each for "first copies," as above suggested, were carried out, they would, of course, be perfectly completed prints, and the photographer could afford to make them so. If, however, a man shows no more respect for his own work than to submit it in a rough and unfinished condition he can hardly expect his clients to receive it with a greater amount, and so business suffers in the end. It also appears to me that the same effect must be produced by the indiscriminate giving of "free sittings," indulged in by some photographers on the off-chance of obtaining a subsequent order, which is surely an undignified and cheap-jack method of business, and if of momentary benefit to an individual probably injures him in the long run, and certainly lowers the status of the profession as a whole, which is the last thing that should be assisted by those who are proud of the calling they follow, and desire to see it keep its proper place among the useful arts.

GLEANINGS FROM GERMANY.

By Henry Dietrich.

Light Energy and Chemical Energy.—Based upon a number of experiments, Berthelot is of the opinion, that decompositions, produced by light in ordinary temperature, resemble very closely those produced by heat. For experiment, the following substances were specially used : Nitric acid, oxide of mercury, and gaseous chlorohydrogenic—and bromo hydrogenic acid. It was proven, that light effects no chemical changes in mixtures of carbonanhydrid and oxygen, carbonanhydrid alone, oxide of carbon and oxygen, sulphur dioxide and oxygen, no matter whether the gases are moist or dry. Peroxide of lead, oxide of silver and chloride—iodide or bromide of mercury are not attacked by light in the vacuum, if steam is present. If dry chloride of silver is exposed to light, a silver subchloride will form and chloride becomes liberated. But if the exposure is done under water, silver subchloride, muriatic acid and oxygen is obtained.

Efflorescence and Oxidation of Sulphite of Soda.—Prof. Bolling has made some interesting and important investigations about sulphite of soda with regard to its efflorescence (corrosion) and oxidation. For his tests he used the sulphite in the shape of a coarse-grained powder, which, when first exposed to the air, showed 41 per cent. value. After one day's exposure the value increased to 43 per cent., on account of a corresponding loss of water; after two days it increased to 48 per cent., etc., to the maximum of 80 per cent. By absorbing oxygen from the air, the oxidation commenced, and the percentage fell to 71½, after which, by further loss of water, the value increased again to 78 per cent., to sink again rapidly with continuing oxidation. According to earlier investigations by Dr. Anderson, the partly corroded sulphite of soda contains a compound of a strong alkaline reaction; on this account, the developer (particularly amidol) will easily obtain a tendency to fog formation, if care is not exercised to keep it from the air.

Photographed by E. B. CORE.

To discover the presence of sulphite in a solution of hyposulphite of soda, a solution of the same is treated with chloride of strontia, or nitrate of strontia. This is well shaken and filtered. Strontium sulphite will form, which is difficult to dissolve and remains on the filter. To determine the mixture quantitatively, it is treated with iodine solution in the ordinary way, after which the sulphite is separated, and the hyposulphite of soda is determined in the filtrate by iodine solution. The difference gives the amount of sulphite contained.

Color values in three color print-negatives.—The final result of a good three-color print depends, as is well known, upon the correct covering of the three negatives. But it is difficult to form a clear idea how the covering has to be, to obtain defined and pronounced tones in the combined print. Hofman, in his book on color photography, has prepared the following table, which may be of interest.

He classifies his negatives into six different thicknesses, which he designates by degrees from 0 to 5. The covering designated with 0 is the thinnest, that with degree 5 the thickest, as shown in the following table :

Red plate.	Blue plate.	Yellow plate.	Resulting tone.
0	5	5	Red.
1	4	5	Red-violet.
2	3	5	Reddish-violet.
3	4	5	Bluish-violet.
4	1	5	Blue-violet.
5	0	5	White-blue.
1	5	4	Red-orange.
2	5	3	Reddish orange.
3	5	2	Yellow-orange.
4	5	1	Yellowish orange.
5	5	0	White-yellow.
4	5	5	Reddish white.
3	5	5	Red white.
2	5	5	White-red.
1	5	5	Whitish red.
0	0	0	Black.
0	1	1	Dark-brown red.
0	2	2	Brown-red.
0	3	3	Red-brown.
0	4	4	Brownish-red.
5	5	5	White.
4	4	4	Light gray.
3	3	3	Gray.
2	2	2	Medium-gray.
1	1	1	Dark gray,

To give Lichtdruck pictures a glossy appearance, like an albumen print, the following varnish is recommended:

Powdered bleached shellac	25	parts.
Alcohol	85	"
Ammonia	65	"
Glycerine	6	"
Dextrine	¼	part.
Boiling water	125	parts.

The ammonia removes all fatty matter from the picture, and the glycerine keeps the film flexible and prevents a breaking or cracking of the surface, otherwise likely where shellac is used.

Silvering of Glass with Formalin.—Dissolve 1 gram nitrate of silver in 100 cubic centimeters of distilled water, and carefully add ammonia until the precipitate has dissolved again. An excess of ammonia should be avoided as much as possible. Dilute the solution with distilled water to 1 liter. In a second bottle dilute 25 cubic centimeters formalin solution with distilled water to 1 liter. The glass plate to be silvered is carefully cleaned and waxed around the edges, and it is then laid in a horizontal position. Two parts of the silver solution are then mixed quickly with 1 part of the formalin solution, and the mixture poured upon the glass plate. After ten minutes the silver will have precipitated upon the glass plate, when the liquid may be poured off, and the mirror is ready to be washed and cleaned under the faucet.

Metol Hydrochinon for Bromide of Silver Paper.—The following formula is recommended:

a.—	Metol	5	grams.
	Hydrochinon	2½	"
	Sulphite of soda	50	"
	Water	1	liter.
b.—	Crystallized soda	25	grams.
	Bromide of potassium	3	"
	Water	1	liter.

Mix equal parts *a* and *b*. Clearing bath is not required.

Intensification of Negatives under Heat.—A pyro-developed negative may, after drying, be again developed in pyro, and heated considerably without melting the gelatine, and a negative so treated shows a density almost double that possessed before heating. A considerable relief is also noticeable, and is accompanied by the formation of a stronger grain, which seems to justify the presumption that several silver molecules have united into larger masses. An emulsion with metallic silver will also ripen similarly to the bromide of silver emulsion. It has also been noticed that a negative taken frequently from the bath and held to the lamp, during the process of development, for examination, develops more quickly and with greater density than if left quietly in the tray. It is assumed that the increase of temperature is the cause of this increased action in development and density, and the application of heat has been suggested as a means of intensification. Pyro and hydrochinon are said to be more responsive to this treatment than the other developing agents in common use.

ON THE PRODUCTION OF SILVER PRINTS WITHOUT TONING.

(*Continued.*)

THAT this would be the natural result of the change there can be little doubt. With the disuse of the toning process, and with it of the accompanying necessity for observing that extreme care in manipulation which the average amateur seldom succeeds in acquiring, it is evident that the risks of failure in working the process must be diminished, and the chances of producing good prints proportionally increased. To be sure, the amateur here would reap the benefit rather than the professional photographer, but in the other advantages which have been enumerated each would be entitled to participate alike.

The facts mentioned in the foregoing short summary should suffice to convince the practical printer that the existing processes, while excellent in their way, are not without their shortcomings, and also that it is desirable that an endeavor should be made to introduce improvements in our methods of working, whereby the imperfections complained of would be either entirely remedied or reduced to a minimum.

In a second paper I propose to treat, in brief detail, of the remedies which would seem to be required to effect this end. I shall also give, as the result of careful experiment, a few jottings which may be of a little assistance to those who hereafter may turn their attention to an interesting and comparatively neglected branch of photographic research.

SECOND PAPER.

In my former paper I endeavored to show that the merits of a good silver print, including under that heading the qualities of permanence and appearance, are not, as is often supposed, inseparably connected with the particular means employed in its production. In the development of my argument I had occasion to make special reference to gold toning. I showed that, in regard to this, the common view is in all probability erroneous, there being no real evidence forthcoming to support the assertion that the retention of the toning process is necessary to success in silver printing. I then proceeded to point out the advantages which would be likely to result from the disuse of the toning bath were it found possible so to alter the conditions of working as to ensure that the quality of the prints would be maintained unimpaired.

In the present article I have to deal with the problem thus presented to notice. It is a problem of considerable magnitude, and one for which a satisfactory solution has still to be sought.

A few timid attempts have been made recently with the laudable object of improving the existing printing processes. Unhappily, the majority of these are of very little practical importance, but one or two display considerable ingenuity and a certain decree of merit. There is, for instance, what is known by the name of self-toning paper, an article of which several brands are now in the market. The particular advantage claimed for it is that no toning bath is required, as the gold salt is already present in the paper, and is reduced to the metallic state during the exposure of the print to light. Having had no opportunity of trying this paper, I am unfortunately unable to speak of its qualities from personal experience. Whatever its merits or otherwise, its use would, at all events, tend to effect a saving in time and a reduction in the amount of care and labor required, two of the advantages mentioned in my former article. On the other hand, the need for the employment of a salt of gold for sensitizing purposes would not, I fear, permit of any reduction being made in the cost of the materials, a matter of the utmost importance from the point of view of the professional printer. The same objection will apply in an equal degree to an older and better-known substitute for the usual system of treatment. I refer to the combined bath for toning and fixing. Even were it not so, however, the latter would be disqualified on other grounds, there being, as most readers will be aware, serious objections, mainly of a chemical nature, to the use of the combination.

A few attempts have been made to improve the quality of the prints, and so get rid of the necessity for toning, by the introduction of special reagents into the sensitizing formulas. The ferric salts have been pressed into service for this purpose, as well as those of uranium. These attempts have not been attended with success, for, though the quality of an iron or uranium print may be improved by the addition of a silver compound to the sensitizing bath, the converse operation is found to produce a silver print of a very inferior description.

I shall now proceed to say a few words as to what would seem to be the fundamental principles involved in the matter, as, were these more generally recognized, the solution of the problem would be to some extent facilitated.

At the outset, what seems to have been quite overlooked in most of the attempts that have been made to improve the existing printing processes is the fact that it is to the silver compound, or compounds, present in the paper that the beauty of the result must be mainly attributed. A just perception of the practical value of this dictum is of the greatest consequence. Its importance lies in this, that only when it is fully realized does it become possible to exclude the operation of secondary causes, and thereby to advance towards a knowledge of the conditions favorable to success.

Regarding the matter from this standpoint, it will be perceived that there is nothing to be gained by employing as a sensitizer a mixture of metallic salts. Obviously, a suitable silver compound is all that is required. The question as to what constitutes suitability cannot, of course, be answered off-hand without recourse to experiment. A condition is, however, of necessity imposed upon us in making this choice. The silver salt selected must be of such a character that, in the subsequent manipulations, the operation of fixing shall not be destructive to the beauty of the image. This, in turn, naturally leads us to consider the nature of the fixing process, and to pass in review the various salts and other compounds that are available as fixing agents.

Fixing may be briefly defined as a process of solution whereby the unaltered and superfluous silver salts remaining in the print are removed in order to ensure its permanence. Now, it will be evident, on consideration, that the solubility of the silver compound, or compounds, which have to be got rid of will vary according to the special nature of the fixing agent employed to effect their removal, or, in other words, that the different substances employed as fixing agents will be found to possess different degrees of solvent power. Moreover, it will be seen that, in choosing a salt for the preparation of the fixing bath, we are, *cæteris paribus*, at liberty to select that which will permit of the operation being carried out with least detriment to the appearance of the print. The importance of this fact, regarded from a practical aspect, will be readily apparent.

Under any circumstances the choice of silver salts available for sensitizing purposes is necessarily limited. It is therefore all the more desirable that the liberty of selection, such as it is, should be in no wise curtailed. Any restriction in the nature of a rigid adherence to one particular fixing formula will evidently tend to defeat this end, while, on the other hand, greater freedom of choice in the matter of fixing formulas will serve to increase the number of silver compounds which may be used as sensitizers.

Upon the right apprehension and right application of the principles which have just been enunciated the attainment of success in any attempts that may be made to simplify and improve the manipulations of silver printing will, I incline to think, ultimately depend.

As a small contribution to the literature of the subject, I propose now to describe in a condensed form, a few experiments in silver printing which were made by me about a year ago, and which, though of no great value in themselves, serve to show that, under conditions differing much from those that have been laid down for the printer's guidance, fairly good results may still be obtained.

The choice of a suitable silver compound was the first object of my inquiry. In the process of investigation it was found necessary to reject, as unsuitable for sensitizing purposes, several well-known salts. Of these the most important was chloride of silver. The quality of the chloride image was found to suffer so much in consequence of the operation of fixing that, after an unsatisfactory trial had been made of a variety of fixing baths, it was thought inadvisable to make any further use of the salt as a sensitizer. A trial was then made of succinate of silver, the salts used for the purpose of sensitizing the paper being nitrate of silver and succinate of soda. Paper so prepared gave, on exposure in the printing frame, a rather crude brick-red image, which, when fixed in the usual way, assumed a weak yellowish-brown hue. Oxalate of silver, employed as a sensitizer, gave a somewhat better result, but, as in the case of the succinate, the quality of the print produced was much inferior to that of a toned silver print upon plain paper. For fixing these prints a hyposulphite bath of the usual strength was employed. After making, without success, a number of trials with other silver salts, principally those of the commoner organic acids, some experiments were made with the neutral tartrate of silver. Employing this salt as a sensitizer, it was found possible, under certain conditions easily complied with, to obtain excellent prints which might be fixed in the ordinary way with very little loss of appearance.

The quality of the image produced by the exposure of the tartrate to light is such, indeed, as to warrant the assigning of a special place to the salt among photographic reagents. In richness and vigor it is scarcely to be surpassed. The abnormal intensity of the silver deposit enables the print to resist the reducing action of the fixing bath to a much greater extent than is found to be the case with the image due to chloride and to most of the other salts of silver. Three conditions would seem to be indispensable to success in working the tartrate printing process. In the first place, unsized paper only must be used. If this precaution be overlooked, and an albumen paper, or one sized with starch, arrowroot, or other similar substance, is employed, it will be found impossible to fix the print produced on such a paper without seriously impairing its beauty. The reason, no doubt, is this, that in such a case the image formed is due, not merely to the reduction of the tartrate, but also to that of certain compounds of silver, which have been formed by the action of the sensitizer upon the organic body used as a size.

In the second place, it is necessary that the sensitizer should be free from acidity. In experimenting with the tartrate, a sensitized paper, neutral to test papers, was treated with a wash of a weak solution of tartaric acid and dried. On exposure only a feeble image resulted. This, on further examination, was found to be composed of minute crystalline grains, which exhibited a strong tendency to detach themselves from the surface of the paper. The appearance, too, of the print after fixing was much inferior to what would have been produced had the acid treatment been omitted.

The third condition essential to the satisfactory working of this process is that the operation of printing be conducted in diffused light. When the printing is conducted in sunshine, red streaks are very apt to make their appearance, and, unless the utmost care has been taken to secure an even coating when sensitizing, wavy lines and irregular markings are also likely to result. The loss of contrast, too, due to exposure in sunlight, is much more decided than it is in the case of a gelatino-chloride or albumen silver print.

For fixing this paper, the usual hyposulphite bath answers well. It may, with advantage, be used in a rather more dilute form than is commonly recommended. A very interesting fact in connection with the tartrate printing process is that the fixing may be successfully performed by the immersion of the prints in a solution of ammonia.

(*Concluded in October.*)

THE MACDONOUGH PROCESS AT MILWAUKEE CONVENTION.

The following abstract was prepared by the demonstrator and was not furnished in time to take its regular place in the Convention proceedings.—[Editors.]

At 3.30 p. m., on Tuesday, July 24th, a demonstration was given in the Convention Hall of the MacDonough Process in Color Photography. Mr. Mark Forrest, of Milwaukee, was the demonstrator. After eulogizing the inventor of this process he proceeded substantially as follows :

" Light is the sensation produced by a luminous ray upon the retina of the eye, and the stimulation of the retina gives rise to the sensation of color. This sensation of color is due to the fact that the luminous rays have different rates of vibration. That is to say, that the rays travel in waves. The red rays are the longest—about thirty-millionths of an inch. The violet rays, at the other end of the spectrum, are the shortest—about fifteen-millionths of an inch—and every other color, or possible variation of color, lies between these two extremes.

" Now, these vibrations, or waves of light, impress the brain with a sense of color by their independent action upon what are called the nerve-fibrils, and these nerve-fibrils are variously affected according to the length of the light waves that reach them. They are practically divisible into three sections—one section is most sensitive to the longest rays, and reflects to the brain a sensation of red ; another section is most sensitive to rays of medium length, and reflects to the brain a sensation of green ; another section is most sensitive to the shortest rays and reflects to the brain a sensation of blue.

" When these nerve fibrils are wholly unaffected—as when, for instance, one is in a wholly darkened room—the brain is impressed with a sensation of blackness, which is the utter absence of color. When the nerve-fibrils are equally affected, the resultant impression is that of white, which is the presence of all the colors. When the nerve-fibrils are unevenly affected, the resultant impression is that of a compound color.

" Observe, that I have been referring to red, green and blue as being the three primary colors, for the old theory that the primaries were red, yellow and blue, has been scientifically demonstrated to be incorrect. Yellow has been proved to be a compound of red and green. From red, green and blue, all other colors can be formed, and only by a combination of red, green and blue can pure white be obtained.

" It was along the lines of this theory that MacDonough worked, but one of the greatest difficulties he had to contend with was a means of properly decomposing a ray of light before it struck the sensitized surface of the plate. He first tried to stipple a screen by spattering it. He attained the result of properly decomposing the light, but found the method was impracticable because the irregularity of the marking made duplicates impossible, and he could not, of course, make a separate taking screen by hand for every picture.

" At last he struck upon the plan of ruling the screen with equi-distant lines of the three colors, and that is the form which is now used. It is difficult, however, to convey a clear impression of the fineness of the lines, which are ruled from 300 to 600 to the inch, so that the color of the lines is only discernible through a powerful microscope.

" Now, let us suppose that you have your camera ready and want to take a picture by this process. There's no secret about it, nor is there the slightest difficulty of manipulation at any stage of the process. A ruled screen, called the taking screen, is inserted in front of the plate, perfect contact with which is insured by moving a little lever at the side. On the front of the lens you place a chromatic balance shutter.

" This chromatic balance shutter is, of itself, a most important invention. Its object is to regulate the blue in the atmosphere, dependent upon the conditions of sunshine or shade—blue being the most actively actinic color, and the one that is always most difficult to control. The shutter is made of three layers of colored mica. By shifting the movable sections the operator can increase or lessen, at will, the proportion of blue in the light that enters the camera.

" Now, when the light enters the lens, the taking screen splits up the ray into its component parts, just as a prism does, though in a different manner, and absorbs or transmits just so much of each of the three primary colors as is necessary to exactly duplicate the color of the object. Suppose, for instance, you are photographing a piece of yellow cloth; now, yellow, as I have stated, is a compound of red and green. Accordingly, the red and green lines each transmit just so much of each as is necessary to make that particular tone of yellow; if it is an orange yellow, the red transmits more than the green; if it is a greenish yellow, the green transmits more than the red. And so with every other color or possible variation of color.

" When the plate receives the image of the object it also receives an impression of the color value lines from the taking screen. From the negative a positive is made. Then a viewing screen, ruled in exactly the same fashion as the taking screen, except that the blue lines are a little lighter—is adjusted so that the lines exactly agree, and the whole picture immediately flashes into color.

" Now, we come to the pictures, but in viewing them I will ask you to bear three things in mind: First, that from first to last, the coloring is obtained by purely scientific means. No man's hand has doctored any of them with a paint brush, but the color is purely dependent upon the decomposition of light.

" Secondly, that these slides will illustrate merely a few of the many ways in which the process can be turned to commercial account. Some of the slides will be of interest for their beauty mainly, but there is hardly any form of business in which color plays a part, in which this process cannot be turned to better account for advertising and similar purposes than any other form of color production that has hitherto been known.

" And the third point is its value as a means of graphic education. In pathology, geology, astronomy, chemistry, botany, architecture—in fact, in almost every conceivable department of human knowledge—the use of such pictures as I am about to show you can be demonstrated to be of enormous value."

Mr. Forrest then referred to the other pictures exhibited, and concluding, said :

" The importance of this work, either from an artistic or commercial point of view, it is hardly possible to overestimate.

" Not yet has it been attempted to enumerate or explore the fields that are open to it. As with every great discovery of the kind, new fields for its development are continually opening, and will continue to open, and its ultimate value to the world is more than any mind can well foresee, or any man can yet foretell."

OBITUARY.

Mr. HIRAM THOMPSON, for many years a photographic stock dealer of Chicago, and a man who was widely known and respected in this country, died at Palmyra, Wis., early in June, from an attack of brain fever. Mr. Thompson had been a resident of Chicago for forty-two years, and had been prominent in business, church and social life during a large portion of that time. He leaves four daughters.

* * *

R. J. Edwards, of Perth Amboy, died in June from injuries received in a runaway accident. Mr. Edwards was born in England fifty-three years ago, but had been in the photographic business in Brooklyn and Perth Amboy for the past fifteen years. He leaves a widow and one daughter.

* * *

L. W. Colby, a well-known photographer of Manchester, N. H., died on the 22d of June, from heart failure. He was about sixty-five years of age, and prominent in Masonic circles.

* * *

J. H. Dickey, of St. Paul, died in Yellowstone Park on July 13th, of typhoid fever. Mr. Dickey was well known in the West, and was in the Yellowstone Park on a photographing tour at the time of his death.

* * *

Mr. Frank C. Wybrant, of Louisville, Ky., died on the 14th of July, at the age of fifty-eight years. He had been a resident of Louisville all his life, and since 1861 had conducted a photographic studio. He leaves a widow, but no children.

* * *

McFarlane Anderson, a well-known process engraver, inventor and writer of process literature, died in New York, at the Presbyterian Hospital, on July 16th. Mr. Anderson had been in failing health for some time, but his death at the last was sudden. His book on half-tone, under the title of "Photomechanical Processes and Guide to Color Work," is probably the most important publication on that subject in this country.

* * *

Mr. Edmund Gaillard, of Berlin, known as one of the best lined screen manufacturers in Germany, died suddenly on the 15th of June. He was greatly interested in the advancement of the autotype process, and his grained screens, to be used as a substitute for the mechanical ruled screens, are widely known.

* * *

The death is announced, under date of August 7th, of Mr. Carl R. Ickis, late manager of the Denver Fire Clay Company, of Denver, Colorado, who died at his home at the age of thirty-one years. The sympathy of the fraternity will go out to his sorrowing relatives and business associates.

A HANDBOOK OF PHOTOGRAPHY IN COLORS.

THIS is an important work on the above-named subject, just published in this country and in London. Published in New York by E. & H. T. Anthony & Co. Cloth bound; printed on heavy woodcut paper, 6 x 9; illustrated with nearly 100 half-tones, diagrams and drawings; 230 pages; price, $2; postage, 12 cents. The *British Journal of Photography*, in reviewing this book, says:

"Two years ago, when writing in our 'Almanac' on the subject of color photography, we suggested the preparation of a book treating comprehensively on the subject, and this present handbook, if less exhaustive than the one we had in our mind's eye, comes nearer to our ideal than any of the works by which it has been preceded. Save in one respect, it is expository rather than practical. The exception is the section on Lippmann's process of interference heliochromy, by Mr. Edgar Senior, the only English experimentalist, we believe, who has succeeded in obtaining good results by this method of color photography. In his short digest of the process, Mr. Senior gives working formulas, based, it appears, on actual experiment. The first 100 pages of the book proceed from the pen of Mr. Bolas, who, with his customary thoroughness, traces the historical development of color photography from the time of Seebeck down to the present; but by far the largest share of the labor of compilation has been accomplished by Mr. Tallent, who, in the 200 odd pages at his disposal, gives an exhaustive *résumé* of three-color heliochromy, to which he appends an account of Professor R. W. Wood's system with diffraction gratings.

"In a prefatory note [to English Edition.—EDITORS.], Messrs. Marion & Co. remind us that thirty-one years ago they published the pioneer work on photography in colors, by Louis Ducos du Hauron, and it is remarked that, as compared with that remote time, photography in colors is now an industrial fact. To be sure! and yet it is incontrovertible that as yet color photography has not acquired much hold of the commercial mind. It cannot be pretended that three-color block-making enjoys considerable industrial success, while the kromskop system of Mr. Ives and the Joly process have not secured the favor they merit. On the other hand, Mr. Sanger Shepherd is making strong efforts to popularize his stained film transparencies, and they are so beautiful that we sincerely hope they will achieve very great vogue.

"We make this observation for the purpose of pointing the remark that the laboratory accomplishments of color photography, beautiful and interesting though they undoubtedly are, are chiefly remarkable as being scientifically interesting rather than as giving scope for industrial development. But this is a matter that deprives the book before us of none of its undoubted merits. All three authors have done their work well, Mr. Tallent, a very able lecturer and writer, having been most painstaking in his researches. We must own to having indulged in a smile at some references to the work of Mr. Bennetto, whose strange utterances on color photography attracted our close attention in these pages a few years ago. We can cordially recommend 'A Handbook of Photography in Colors' to the student of the subject. We ourselves shall value it as a book of reference to a branch of photographic thought and investigation that fascinates by its very difficulties and elusiveness."

The *Photographic News* says, in concluding a long and very exhaustive description of the book:

"This is the only work which has been published in England on the subject which is worth reading, and it will be found quite indispensable for all those who wish to take up this most interesting and fascinating of subjects."

All copy for October number must be in our hands by September 15th.

D. E. ABBOTT, of Huntington, W. Va., has lately issued a new catalogue for 1900, consisting of thirty-six pages and covers, and containing descriptions and prices of a large variety of frames, framed pictures, mirrors and hat racks. An experience of thirty years in this business enables this firm to put out an extensive line of goods in a very attractive manner, and its catalogue will be sent to those requesting it.

A very neat and attractive booklet has just been received from Penrose & Co., of London, England, entitled, "A reminiscence of a Visit to the Stand of Penrose & Co., at the Paris Exposition, 1900." As a catalogue and announcement of their goods it is effective in the extreme. The plates and press work are excellent.

We have received 'Chemisches Wörterbuch" (chemical dictionary), edited by Professor Dr. Carl Rothe, in Vienna, and published by K. Schwier, *Deutsche Photographer Zeitung*, Weimer, Germany. To photographers as well as amateurs conversant with the German language, this book will prove to be a valuable source of information, as it contains an explanatory description of chemicals, chemical compounds, minerals, and even drugs, in a condensed and systematic form, which can thus be easily looked up, sometimes so difficult and irritating in larger dictionaries. This book may be had through our publishers. Price, $2.

"Künstlerische Landschafts Photographie," of which we have received the second edition, published by Gustav Schmidt, in Berlin, is the authorized German translation of A. Horsley Hinton's work on artistic landscape photography, and, like the original, is an excellent guide and instructor to all landscape photographers and amateurs who are not conversant with the English language.

The price is, in paper cover, $1.50; bound in linen, $1.75.

An extremely vigorous editorial article in Wilson's Photographic Magazine for July, on American Photography, scores the attempts of certain critics to belittle and decry "all American photography save that produced by a certain school," and is a fitting article with which to wind up the various comments that have lately been deemed necessary in dealing with this subject. We quote the concluding lines of the article, which are as follows:

"As for American photography, it needs neither apology nor justification at our hands. It is appreciated at home by a public quite as intelligent as that to which the European photographer appeals. Whenever exhibited abroad, as at London, Paris, Berlin, Vienna, etc., it has secured more than a proportionate share of praise and reward. In common with the photography of England and other countries, it has its weak points as well as its points of excellence. But if we compare it at its best, or by its average with the best or average foreign work, the fact is plainly evident that the American photographer, amateur or professional, has no cause to be ashamed. And this may be said, with equal truth, of his achievements in the past as well as of his promise for to-morrow."

An article in the same number, by W. E. Ward, on "The Cult of the Godlings," treats of the same subject in no uncertain manner. Mr. Ward has a faculty of calling a spade, a spade, which is quite refreshing, and the article referred to is a very strong one.

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Photograph by PACH BROS.

ANTHONY'S

Photographic Bulletin.

EDITORS:

PROF. CHARLES F. CHANDLER, PH.D., LL.D.

W. I. SCANDLIN.

VOL. XXXI. OCTOBER, 1900. NO. 10.

PHOTOGRAPHY AS LEGAL EVIDENCE.

THE importance of photography in the business community is daily becoming greater, and in no way is this made more manifest than by the largely increased number of instances in which its results have been accepted, in the past few years, as competent evidence in suits at law and in criminal cases at the bar. The fallacy of the once-believed statement that "photography cannot lie" has now come to be recognized, but with the explosion of this theory has come the knowledge that while it is fallible, like all other products of man's skill in harnessing Nature's forces to his service, it is nevertheless capable of vast possibilities in the record of facts, as they may be evidenced by conditions that are visible to the human eye, and we believe the tendency is growing, in favor of accepting as legal evidence those photographs that can be shown to have been taken with the honest purpose of reproducing the condition of affairs as they existed when the photographs were made. The practice of photography is now so general, and the mass of the people is so familiar with its powers and limitations, that a dishonest photograph, one deliberately faked and produced for the purpose of misleading a jury, is becoming less common and more easy of detection each year; and it goes without saying that a fraud of this kind, exposed, proves more damaging to the perpetrators in most cases than would be the loss of the evidence sought to be substantiated by it. Many things are taken into account in gauging the value of photographic evidence, as, for instance, in the case of a railway or other accident, the time at which the negative is made, whether immediately following or after the lapse of some hours or days, the motive that prompted its being made, whether it was viewed simply as a matter of local interest, and photographed as such, or was made by one directly interested and as a record by which to prove damages, or if perhaps by a professional, at the instigation and in the employment of one or the other parties at interest. All other things being equal, much greater weight attaches to the print made by the local professional or amateur, who procures it within a short time of its occurrence, for the local paper or his own collection, than to that made with an obviously partisan motive. But even in the latter case, where everything possible has been done to make the picture record point to a given conclusion, we believe that in the large majority of cases at least, the photographs may be analyzed by an expert and made to refute the testimony they appear to give, if any difference exists in fact, between the real and the pictured record.

In the case of forged signatures, raised checks and documents of

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all kinds, photography has rendered material evidence, and the facility with which originals of this nature may be enlarged to many times their original size is an important factor in revealing changes that may have been made in the originals. The value of such enlarging consists chiefly in the fact that as the document is magnified in size, the grain of the paper, parchment, or whatever it is written upon, is also very greatly magnified, and with this enlargement of the grain, erasures by acids or mechanical means are indicated as they could not be by any other method. Documents are frequently found which, on most careful examination, will show no trace of having been tampered with, but which, on enlargement under proper conditions of lighting, will show distinct traces of alteration.

That photography is bound to assume a higher place as a factor in legal evidence as time goes on, does not seem open to doubt, and with every new instance of its successful application to this field its importance and dignity will increase, but with every case of dishonest photographic evidence the profession will suffer and the good name of photography will be debased. Let us then see to it that in our own work of this kind our first, last and only aim be, to record facts as they exist, without bias or favor.

OBITUARY.

THE death is announced of Mr. Alexander Göschl, of the celebrated firm of C. Angerer & Göschl, of Vienna.

Mr. Göschl died on the 14th of August, at the age of fifty-two years. The combined efforts of the deceased and his partner, Mr. Angerer, have resulted in the building up of a reputation in the field of fine process work that is world-wide, both for quality of work produced and for business integrity and reliability.

Mr. C. B. Talbot, for many years a prominent architect, and civil engineer of Portland, Oregon, and later of Tacoma, Washington, died at his home on August 13th, in the prime of a busy life, largely devoted to the interests of others than himself. Mr. Talbot had been prominent in the cities in which he lived as an earnest advocate of pure and unlimited water supply, and his efforts in this direction were untiring.

He early took up photography as an aid in his work, and in the later years devoted much time and attention to process work in which he made several important advances. His name and writings will be familiar to readers of *The International Annual* and the Bulletin, to both of which he has contributed in the past.

His loss will be widely felt. He leaves a widow and two sons.

Mr. Henry C. Lovejoy, a well-known photographer of Philadelphia, died on August 13th, at the age of sixty-three years. He had been established in the photographic business in Philadelphia for thirty-five years, and was one of the oldest and best known photographers in the State.

Mr. John H. Wood, one of the leading photographers of Albany, N. Y., died on the 15th of August, at the age of seventy-one years, his death being due to paralysis.

The death is also announced of Mr. Lowell Gilmore, of Binghamton, who opened a gallery there in 1858, where he has since been continuously in the business.

Items of Interest

ALL who are familiar with the products of the Actien Gesellschaft of Berlin, whose photographic preparations cover the requirements of almost every department of photography, will be interested to know that a gold medal was awarded them at the Paris Exhibition for the excellence of their manufactures.

A very ingenious little instrument has just been put upon the market, under the name of the "Autopose," the object of which is to enable the operator to pose himself in the view he may desire, without the inconvenience of the long tube and bulb heretofore necessary. It is made for use with cameras fitted with bulb-operated shutters and consists of an air reservoir and plunger that may be so regulated as to release a trigger after a given lapse of time, which in turn releases the shutter and makes the exposure. Once set, the action is automatic, and the time after setting and before release of the shutter may be made longer or shorter, at will.

Edward E. Pidgeon, for many years prominent in newspaper and theatrical circles in New York and Brooklyn, has been appointed as the Press Representative in charge of the Eastern Bureau of the Department of Publicity, of the great Pan-American Exposition, which is to be held in the city of Buffalo for the six months beginning in May next. Mr. Pidgeon will, in a few days, assume command at the headquarters which the Exposition will open in New York City. Meantime, whenever information is wanted about the Why, or the Wherefore, the Plans, the Progress, the Pictures, the Publicity or other Pertinent Pointers Pertaining to the Pan-American Exposition, it may be obtained by addressing Mr. Ed. E. Pidgeon, New York Bureau, Department Publicity.

The American Museum of Natural History in Central Park, New York, was awarded a gold medal at the Paris Exhibition for the excellence of the illustrations prepared by its Department of Public Instruction, and the system of free education it is carrying on in connection with the New York State Department of Public Instruction. This system is based upon a large number of lantern-slide illustrations of all parts of the world, which are carefully prepared, and accompanied by descriptive lectures, duplicate sets of which are supplied by the Museum to various schools throughout the State.

The English journals are discussing with some warmth the reported action of the water boards in some of the larger towns, where it is proposed to levy a special water tax, amounting to about $5 per year, on all users of water for photographic purposes, taxing equally the amateur and the professional, regarding which *Photography* says, in a recent editorial: "It is now several months since the Harrogate water authorities intimated their intention of levying a special charge upon amateur photographers for the water they consume. The example then set has recently been followed by the Truro Water Company, who have circularized consumers on the subject.

"We note that they propose to charge 5 shillings a quarter for photography, a charge which certainly appears exorbitant. At anything like a reasonable rate per thousand gallons, the pound a year suggested comes to more than anybody but a professional photographer doing a very large printing business would be likely to consume.

"We should be the last to advocate a policy of spoliation. Water companies, like any other traders dealing fairly and squarely with the public, ought to be paid for what they supply. If they choose to provide the consumers with a meter by which they can measure the exact amount for which to charge, all well and good. This is no more than is done by the butcher or baker, who keeps his scales on the counter, and charges per pound. If, from motives of economy in capital outlay, they prefer merely to make an annual charge to cover a supply for ordinary purposes, then we deem it unjust to attempt to levy an increased rate upon those who may pursue, to however slight an extent, a hobby which, even when enthusiastically followed, does not lead to any great consumption of water. It is, indeed, high time to protest.

"Our Truro friends seem exercised in their minds, or, at least, some of them do, upon the fact that the charge is made to amateurs and professionals alike. Some seem to think it ought to be levied upon professionals only, since they are making a living by photography; others take the view that it is hard to interfere with a man getting his bread and butter out of photography, while those who merely resort to it for pleasure, could afford to pay a special charge for the water they use. The amount of water consumed by the average professional, or even the enthusiastic amateur, is so trifling in quantity that any charge made for it can only be spoken of as preposterous. Were there probability of a water famine, or were the cost of water such as to make it worth, say, a penny a gallon, we could understand the objection of the water companies to have their supplies depleted by photographers. But, with water as plentiful and as cheap as it is at present in this country, the absurdity of levying a special rate for the few gallons per annum used by the average photographer is apparent.

"Unfortunately, it would seem that the absurdity of a contention does not present any bar to the making of it by a water company. It is on record that it has been seriously argued that the use of water for a bath was not 'a domestic purpose,' from which it might be gathered, either that the habits of the directors of water companies are distinctly unpleasant, or that any excuse is good enough for an increased rate. If this kind of thing goes on, it will behoove photographers to combine in some way or another to resist what would threaten to be an iniquitous tax."

◆

THE G. Cramer Dry Plate Company announce an important innovation in the fact that hereafter all their plates will be protected by labels attached to the bottom of the boxes in which they are packed, containing notice of the time limit within which the plates must be used in order to insure the best results from them. This is a direct move in the interest of the consumer and will, no doubt, be appreciated by the users of this plate. Users are also warned against accepting Crown or Banner Brands prior to emulsion No. 13,180, and Isochromatic prior to emulsion No. 3,916.

◆

MR. GEO. G. ROCKWOOD, the well-known photographer, is in receipt of so many requests for instruction in photography, that he has determined, after the Christmas holidays to give a series of lectures in New York, on the practical side of photography. His direct, clear style of writing and speaking will enable his pupils to get a thorough knowledge of the art. He will take up posing, lighting, and the practical business side of photography for professionals and advanced amateurs. Mr. Rockwood is, we believe, the first business expert to do this.

◆

THE new buildings of the Illinois College of Photography are now completed and occupied by the college, which is rapidly filling up with students from all sections of the country. The new buildings are completely appointed with all modern conveniences and appliances for business and comfort, and reflect great credit upon the enterprise of the President, Mr. Bissell. The success of this undertaking seems now to be fully assured.

◆

THE Eastman Kodak Company is to be congratulated upon having received the Grand Prix, which is the highest award possible, at the hands of the jury of award at the Paris Exhibition. Following the Grand Prix in order of merit are the gold medal. silver medal, bronze medal and honorable mention, respectively. The Kodak Company has reason to be highly gratified at its success.

THE NEW ENGLAND CONVENTION.

THE convention of the Photographers' Association of New England, which was called to order on September 12th at Boston by President H. H. Pierce, and lasted through the 13th and 14th, was unusually strong in the spirit of fraternity that was manifested and in the quality of the pictures exhibited. Of the latter, there were in all three hundred and fifty-four prints, many of which were from outside New England, and representative of the best portrait work of the whole country. The art exhibit was on the salon plan as in previous years, and an effort was made to change to the method of exhibiting in classes—no definite action was taken, however, on this proposition. Mr. Geo. H. Van Norman, of Springfield, Mass., was elected president for the coming year.

PHOTOGRAPHY IN SURVEYING.

By J. A. Flemer.

THE main disadvantage connected with photo-topography rests principally in the great time consumption for producing the map in the office by means of iconometry. The iconometric platting of from fifteen to thirty points by intersections of at least three "radials" or lines of horizontal directions for each point determined, including the platting of the necessary picture-traces and the verification of the focal lengths of the (distorted) photographs, may be regarded as a good day's work for the draughtsman.

The main advantage, on the other hand, appears in the rapid execution of the field work, especially under unfavorable climatic and atmospheric conditions. The photo-topographer, spending most of his time in traversing the country, stopping only long enough at the selected camera stations to photograph the panorama to make the needed outline sketches of the terrene for identification of the reference points and to observe a few angles (both vertical and horizontal), with the transit or theodolyte, can, in a few good days, if they occur at irregular time intervals, cover a much larger territory than is possible with any other surveying method under similar conditions.

A photo-topographic party is essentially an economic one, inasmuch as it comprises but one topographer, the chief, assisted by as many packers or hands as may be required to transport the outfit over the region to be surveyed.

The time-consuming part of the work—the iconometric platting—is independent of weather conditions, and it may be accomplished at any time by one or two iconometric draughtsmen.

The ready identification of points on the various photographs is more a matter of practice and far less difficult than would appear at a first attempt. All difficulties in this respect will soon be overcome by a comparative study of several pictures, held side by side (showing the same terrene from different stations), and also by utilizing the numerous tests and constructions available for this purpose, of which the most important one has been given by Professor G. Hauck.

In order to economize in time, the general progress of the field-work should, as far as possible, be regulated by meteorological and climatic conditions of the regions to be surveyed. The moving of the camp should be done during inclement weather; elevated stations should be occupied during favorable time periods and the lower stations, being more readily accessible, may be successfully occupied at almost any time if they are surrounded by mountains and do not command extended views. Good work frequently may be done in lower regions of this character when work on mountain peaks would be impossible, owing to misty weather and snow storms or strong winds, which frequently occur there while the lower altitude, during the same time period, may be free from either of them.

A good selection of the camera stations is important, and should be given special attention. The selection should be made dependent upon the elevations and the distances of the terrene points which are to be determined, upon the focal length of the surveying camera, upon the scale of the map and its degree of accuracy, and, finally, upon the character of the country in general.

A diversified and broken terrene will require more stations to obtain a good topographic development and representation on the map than a more regular section, and the camera stations should be so selected that a full and perfect control of all depressions, valleys and general features may be obtained iconometrically from the smallest number of stations. Every feature that is to find a representation on the map should have been photographed from at least two, better, three, camera-stations. Generally speaking, if a part of the terrene be visible from two stations only, its iconometric location in horizontal plan may be accepted if its control points have been determined on the plan by good intersections (if the horizontal lines of direction intersect each other at angles from 40 degrees to 90 degrees), otherwise "vertical" intersections or other means for locating the points on the map have to be adopted, unless it is desirable to occupy additional stations, while the topographer is still in the particular locality requiring the development, thus obtaining horizontal directions forming the intersections of three lines for each control-point. It is evident, therefore, that the photo-topographer should plat all stations as soon as occupied, while still in the field, so he can always be well informed of the weak points in his work and strengthen it wherever needed by occupying sub-stations, to insure a perfect control.

On the other hand, it will be advisable not to occupy more stations than are actually required for the proper cartographic development of the terrene in order to reduce the number of photographic plates to be transported during the campaign, to simplify the iconometric office work, and in order to save as much time as possible for necessary work, the working season in mountainous regions being naturally limited.

To secure the proper control for the location of the camera-stations on the map, at least three, better four, lines of direction to surrounding geodetic or triangulation points should be observed from each camera station. If so many triangulation points are not visible from any one station, that many directions should still be observed, taking other well-defined points (in place of the deficient triangulation points) that may have been located before as other camera stations, or which may be located by subsequent observations from other stations still to be occupied. Every occupied station should be supplied with a signal before leaving. Such signals are then to be observed upon from subsequent stations whenever practicable. Both horizontal and vertical angles are observed.

Regarding the selection of the most favorable hour of the day for photographing the panoramas, the observer must be guided principally by local condition. Generally speaking, views of identical regions should, if possible, be taken at the same time of day and under similar, if not identical, atmospheric conditions that identical points on different views may appear under the same illuminations. The actual shadows will then be alike on such views.

Slopes altogether in shadow should be avoided, and also photographing when the sun is low. In the latter case additional trouble may arise from the fact that one or more pictures, if taken in the direction toward the sun, may become affected by "halation"—they will, at best, be more or less flat and deficient in detail. Still the photo-topographer is seldom privileged to select the best hours of the day for photographing the panoramas. He has many things to consider, and is nearly always limited in time at his disposal. Having also to contend with moving cloud-masses, inaccessibility of points, etc., views will at times have to be taken toward the sun if they are not to be dispensed with altogether. With exercise of care and judgment photographs may be obtained that will be of value for the iconometric platting, even when taken under such adverse conditions. The camera lens should be always shaded as much as possible when taking pictures under such trying conditions.

It may generally be stated that the best results in mountainous countries are obtained when exposing the plates during the latter part of forenoon, as the elevated peaks are frequently "hooded" in clouds and hidden from view in the afternoon. Although the clouds frequently disappear again late in the afternoon or toward early evening, the details of the valleys will then be obscured if they are not hidden in misty shrouds of grey.

The entire work at a camera-station when everything is favorable may be finished within an hour, or two hours at the longest, and as three well-placed stations will control the horizontal and vertical representation of an extended area, a large territory may be covered, photo-topographically, in a comparatively short time if the weather conditions are also favorable.

The time consumption for the field work of a detailed photo-topographic survey will nearly be the same as for a more generalized survey or topographic reconnaissance, as about the same number of photographs would be required for both surveys. The difference, however, appears at once during the execution of the office work. In the first case, the number of points to be determined iconometrically may be very large, while in the latter case it naturally would be comparatively small, comprising points which characterize and control the main forms of the terrene only.

The photo-topographic method, therefore, is particularly well adapted for executing so-called preliminary surveys in mountainous regions, for that class of engineering works in which the final and best location depends upon a comparative study of the different sites based upon topographic maps. Only a limited number of points would have to be determined iconometrically to decide whether the site under consideration fulfills the required conditions when a more detailed and more accurate map may be constructed from the same field data without having to supplement the original work, either by additional measurements or photographs, every panorama view giving the means to plat therefrom, iconometrically, almost an unlimited number of terrene points.

ADVERTISING AND DISPLAYS.

By Edward W. Newcomb.

HAS the profession of photography a code of ethics which forbid advertising like other people who have something to sell, and sell it by announcing the fact, or has advertising been deemed unprofitable? I fancy, from the samples of advertisements I have cut out and saved, when, by chance, I have come across a few around holiday time, or from those which are kept standing the year round unchanged in country papers, that it is unprofitable. The mere business card of a photographer in a newspaper or magazine does not tempt people to go to the advertiser for their pictures. The public would prefer to walk around town a bit and look at the displays, and determine from what is shown who they want to photograph them, if, indeed, they want to be photographed at all. The name and address of a photographer, supplemented with the statement that babies are his pets, rates reasonable, or groups a specialty, is no advertisement at all; it won't pay, because it has not a word in it to influence the reader to go to that place. In fact, if some reader saw it the result might be to remind that reader that he or she did need some photographs, and make the person go straight away to the usual place, whereas, if the advertising photographer had used a businesslike advertisement, that person would feel drawn toward the new place.

If an advertisement in a paper or magazine of large circulation does not pay, it is the fault of the advertiser entirely. Cheap advertising may not pay. I don't think it does often; but if a photographer gets the best time rates for advertising in high-class organs and tells his story effectively, it will pay him even better than it does the merchant (who appropriates thousands of dollars a week for his advertising), because the merchant is selling at, perhaps, 10 or 20 per cent. profit, while the photographer is selling at many hundred per cent. profit. If the photographer could keep busy behind his camera all day long the year around, he would soon be able to retire; he can make $3 clear out of $4 taken in, and keep plenty of well-paid assistants at that, if he only can work himself and his force to somewhere near their full capacity. Now, a product that nets 75 cents on the dollar —300 per cent. profit—is well worth advertising, and should be pushed under the public's nose until every one feels that they must have some pictures taken at the establishment. Our large merchants pay large salaries to experts in writing advertisements simply to insure "taking" matter. They might have $5 goods for 50 cents, and keep 'em till doomsday, if they did not advertise them, and do it in a fetching manner. Supposing the dry goods merchant or the department store advertised that their place was at such and such streets, and that they kept a dry goods or department store. Would the public throng through the aisles as they do? Certainly not. They advertise specifically, make attractive announcements, and the shopping public look at those advertisements and are convinced that they must visit those stores at once, and that is advertising that pays. If you can only interest the reader, your name and address may be in nonpareil type, and he'll find you all the same; never mind displaying that part if space is expensive; talk about the worth of your goods. I believe that just as much interest can be waked up on good photographs at a fair price as upon lots of things that are well advertised, and pay principally because they *are* advertised. Just look over the daily paper and see the things storekeepers make a demand for, by advertising. It is not that one is in urgent need of an article that he buys it. Not a bit of it, generally. It is because the man who has it to sell has a way of showing the value of it to us, and convincing us that we ought to have it. Surely this ought to be easily accomplished by the photographer; a dozen photographs is a particularly nice thing to have. No man or woman will lack use for them if they can only be persuaded to buy them. Most all men and women have a considerable dash of vanity in their make-up, and will use up a dozen in no time if they have them. That is another good thing about photographs—the purchaser uses up the whole purchase except one immediately, and the seller, if alive to his own interests, can sell more very often. Photographs are not like a great many articles which once bought last forever. They are more like the nice, thick, juicy beefsteak, bought, paid for and disposed of in one day, leaving a pleasant memory behind and a strong desire for more at an early date.

As for methods of advertising, there are many. First and foremost I believe in newspaper advertising of the right sort. Photographers in large cities should study this matter deeply. Look over the New York *Herald* or *Tribune* or *Sun* or *World*; look till your eyes are tired out, and you'll not see the advertisement of a single photographer. Is this because all who could afford it have so much to do that they cannot accommodate any more sitters? Well, hardly. The very busiest men in town are not often over-worked, I know, and if they had all they could do they might still enlarge their places and so accommodate more people. The more of this they did, the sooner they could retire and live in comfort. But what an idea—retire and live in comfort! How many photographers do that? More likely they are working away at their profession right up to the moment of death's summons, whether young or old. Why should this be the case when the photographer makes 300 to 500 per cent. profit? That brings us right face to face with the fact that photographers are not doing business any better than farmers. If merchants ran their business on the narrow, careless, ill-judged manner that photographers and farmers generally do, the country would be in a state of panic within a very little while. Look at the facts. See for yourselves that this is so, and then if it is not owing to poor quality of work, the reason for only moderate business will have to be laid at the proper door. As things usually go, if two young men were given $5,000 each to start with, and one understood the tobacconist's business, the other the photographer's, and each spent ten years at the line he understood, I'd have no hesitation in wagering that the tobacconist got ahead and the photographer was almost as poor as when he started. But to return to advertising. It is the only way to let a multitude of people know about your place, and first and foremost I would advise the newspapers, if I could make, or get made, an attractive advertisement. Bates, the advertising expert, says, in his book, that a good advertisement should state what the article is for, how much it costs, where to get it, and show a picture, if it can be pictured. That is one definition of an advertisement, but the photographer has to look a little farther than that. He has got to give the reader the impression that his pictures are a little better than any one else's. Photographs, like coons, look alike to many. The word photograph describes all sorts and conditions indiscriminately to them. They would about as soon have one man's work as another's—and to get their money a great deal of the old Power's style of convincing, talky advertising would be necessary. Very good. Give 'em Power's style and I'll wager that it will bring results worth talking about. I should say that a 6-inch single column advertisement, changed weekly at least, oftener, if possible, would be about the right space to use to wake up a splendid trade. Just talk right at the people in well-chosen, convincing, simple words, and the cost of the advertisement will soon be but a flea-bite when reckoned against the proceeds of it. I never saw this done by any photographer, so the field is certainly wide open. It will cost a

(*Continued in November.*)

HOW THE MAFEKING ONE POUND NOTES WERE MADE.

IT may not be generally known that photography played an important part in the political economy of the besieged inhabitants of Mafeking, S. A., during its recent investment by the Boers. The fact remains that owing to the energy and fertility of brain at the disposal of the indomitable Colonel Baden Powell, a series of bank notes was conceived and executed which served as legal tender during the siege and helped to make easy the exchange of currency which otherwise would have been almost impossible. The following account which is reprinted, in part, from *Photography* will doubtless be interesting and may suggest important ideas to some future financier.—[EDITORS.]

One of the most interesting forms of currency to a photographer must be the £1 bank notes issued by Colonel Baden Powell during the siege of Mafeking, since they were made by an amateur photographer in the town, Mr. E. J. Ross, by a purely photographic process, the ferro-prussiate. Mr. Ross is now in England. We recently had an interview with him, when we had the opportunity of looking over a magnificent collection of photographs taken by him during the siege.

The idea of some such an issue as the Mafeking £1 note occurred to Colonel Baden Powell when he found that the supply of gold in the town was running short. Knowing Mr. Ross as an amateur photographer, he consulted him upon the feasibility of issuing notes made by photography ; the Colonel, of course, as befitted such an universal genius, providing the design.

Mr. Ross, who has been a resident in the town of Mafeking for some twelve years, in which, in partnership with Mr. Aldred, he carries on an extensive business, had only returned to Mafeking a week before the siege, from the coast where he had been spending a holiday. He said: "As soon as I saw that there was a prospect of the siege being a long one, I carefully scoured the town for plates, and bought all that I could lay my hands on."

We were curious enough to inquire what brands he bought, but found that they were, without exception, Ilford. "They were all Ilfords, but of all sorts of speeds and brands from Ordinary to Extra Rapid."

Throughout the siege he photographed right and left, and as a result has a record of the entire transaction such as can hardly be equalled by any other.

Knowing Mr. Ross, Colonel Baden Powell discussed with him his idea of the issue of notes, and to test the practicability of copying a pen and ink design for the notes, an experiment was made with the Colonel's sketch book, which Mr. Ross photographed accordingly. The result of that exposure showed that the lifelike sketches, including one of a distinctly humorous nature, were readily reproducible. The leaf from the sketch book was a success, and the next thing to be done was to prepare the design.

It may not be generally known that the design for the notes themselves was the work of the popular B. P.

A few words now upon the design itself. In the center is the little Howitzer "Wolf," made of brass and steel by the railway workmen of Mafeking themselves, while by its side is a pile of the home-made 4½-inch shells used in it. Nothing can show more plainly the resources of an educated, skillful man, possessed of willing helpers, and just as much knowledge as he has been able to acquire in the intervals of his strictly professional study, soldiering, than the way in which Mafeking made its own artillery, shells, postage stamps, notes, and other requirements. "Wolf" is only a type of the self-help that was conspicuous all through the siege. Above the Howitzer waves the Union Jack, beside which stands a typical member of the Protectorate Regiment. The woman kneeling with the child in her arms symbolizes the helpless inhabitants of the town surrounded by those who were protecting her. On the left of the design is the bearded form of one of the loyal Dutch burghers, while on the opposite side is a member of the Town Guard, conspicuous all through for their gallantry.

The design having been found satisfactory so far, was completed, the negative made—Mr. Ross used six, one of which got broken by a shell—and printing set in hand.

Silver paper or platinum would occur to the photographer as a possible method of printing. There was none to be had, but the photographers of Mafeking were not to be beaten. With Mr. Ross was associated Captain Greener, the chief paymaster, and this officer bethought himself of the ferro-prussiate process. No time was lost, the directions and formula were hunted up in an old text-book, and the preliminary trials made. Needless to say, they were successful, and the Mafeking notes are blue prints. The materials required, as our readers know, are potassium ferricyanide (red prussiate of potash) and ammonio-citrate of iron. The prussiate was plentiful enough, but the supply of ammonio-citrate of iron was a very limited one. The whole of what was in the town was speedily used up, but some more was brought—in a little pot—from the north, by a native runner, and this had to last for the rest of the siege. The paper used in making the notes was ordinary note paper, of which there was a plentiful supply.

Every night Captain Greener coated the paper for the next day's printing, brushing the sensitizing solution on with a camel's-hair brush, and allowing it to dry till the morning, when the prints were made by Mr. Ross. In the brilliant light of the South African sun, the printing itself took but very little time, most of the prints being knocked off in from fifteen to twenty minutes. The printing quality of the various negatives, as might be expected when one considers the difficulties under which they were made, varied considerably. Everything in Mafeking was done light-heartedly, and the very negatives themselves were nicknamed according to the speed with which they performed their work. The clearest and best was known as "The High Velocity, Quick Firer," one which took an intermediate time—can this be the "average negative" of the text-books of which we hear so much, but never see?—was christened the "Armstrong Gun," while the slowest printer of the lot bore the title of the "Lord Nelson Muzzle Loader."

"Were you ever in any risk from the fire?" we inquired. "I never was actually wounded" was the reply, "but came very near it once or twice, while engaged in printing the notes. One morning a shell dropped into our auction room not more than fifteen paces from the dug-out, and blew the room all to pieces. I was standing at the top of the ladder leading to the dug-out, and was knocked head over heels to the bottom. Another time, one of the negatives was smashed by a piece of shrapnel."

There was a good deal of difficulty at first in getting the paper evenly coated. Captain Greener had never worked the ferro-prussiate process before, but after a little practice the blotches and uneven patches disappeared, and in the notes that we saw the background was uniform and smooth.

One serious difficulty, however, was continuous right through the siege. The supply of good water—rain-water was what Mr. Ross particularly wanted—was an extremely limited one, and it was only by stealth that sufficient for his photographic purposes could be obtained. Had the quantity that he was consuming on this score only have leaked out, his photographic performances might have come to a very abrupt termination. As it was, he succeeded in covering them with a veil of obscurity, and, although the supply of sufficient rain-water was never easy, yet he managed to get enough for his immediate requirements all the time.

The Mafeking Mint was situated at the back of his business premises. In this dug-out, a subterranean darkroom of a most uninviting character. with nothing but its bomb-proof nature to recommend it, Mr. Ross himself washed out and dried the notes.

Here in this dug-out, surely some of the strangest circumstances under which an amateur photographer ever worked, Mr. Ross produced the bank notes at the rate of about twenty a day, until before the siege terminated over five hundred of them had been issued.

It is worth mentioning that, as a business speculation, the issue of notes may be regarded as distinctly a success. They were exchanged for a sovereign in gold, and not one has ever been presented for repayment, the explanation being, of course, that the Mafeking siege note is worth a good deal more than its face value.

Amongst Mr. Ross' collection of these notes is one which was not issued, and has been marked "canceled." It is one of a batch which caused them some annoyance. Spending one night hard at work, sensitizing paper, they found in the morning when starting to print that, although it had not been noticed before, they had been using, instead of plain note paper, the official paper of the Bechuanaland Border Police, and that embossed on every sheet were the initials of the force, "B. B. P.," surmounted by a crown. These notes were, therefore, not issued.

Mr. Ross, who has so kindly furnished us with the particulars about this extraordinary issue, is an enthusiastic amateur photographer, and showed us large numbers of curios of all kinds, in connection with the siege. He had been privileged to go everywhere, and photograph everything, for which the permit, signed by Lord Edward Cecil, was sufficient warrant. Armed with this, his camera was set to work upon every event of any importance. He has views in his collection of the results of different shells bursting, portraits of officers, town council, the town guard, services, and many other incidents of siege life. Amongst his treasures is a complete file of the *Mafeking Mail*, printed on all kinds of paper from the ordinary newspaper down to parcel paper; some of the issues are on plain, and some on ruled foolscap. Postage stamps, also ferro-prussiate prints, were issued during the siege, and perforated with a perforating machine, which was found in the town. The smaller notes, value 1*s*., 2*s*., 3*s*., and 10*s*., were simply printed in the press on ordinary paper.

Nothing that we have ever seen has so clearly demonstrated the resourcefulness displayed in this little town during its long beleaguerment. Primarily, the credit must rest with its wonderful commandant, who would seem to be as much at home designing paper money as counteracting the manœuvres of the wily Boer. Secondarily, no small share must fall on the plucky garrison and townspeople. Of the latter, Mr. Ross may be taken as a type, applying the knowledge gained in pursuing his hobby to the service of the common weal.

It is with very great pleasure that we have been able to secure from him so full an account of an experience that may truly be said to be photographically unique.

Photograph by PACH BROS.

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BUSINESS METHODS AS APPLIED IN PHOTOGRAPHY.*

By John A. Tennant.

THERE is a common notion among photographers that business methods mean an elaborate system of red tape—bookkeeping, ticketing and checking the customer, his order, and every detail of the day's work. Now, while it is desirable that the photographer should keep his books in good shape, and have an intelligent control of his establishment and its working, the business methods which I propose to discuss do not concern these details particularly. What we are after this morning are those schemes, plans or methods by which successful photographers create business, and make it grow from day to day.

The whole question of business methods was very aptly put to me a few days ago by Pirie MacDonald. He said: "Tell the boys that they must make business; that if they are content to take what comes to them, they will end their days in the poorhouse." The man who grasps this idea has taken the first step towards better days. There has been altogether too much waiting for business in professional photography. The day has gone past when a man can hope by good work alone to draw people into his studio. The successes of recent years have been won by men who could think out and put in operation schemes by which business was brought to the studio. Here, then, we have the field for method in photography as a business. It covers the getting of business, and then the successful management of business when obtained.

Mr. MacDonald has been very busy all summer. His methods (if we knew them) would give us some very interesting data; but he did not tell me anything of them. The fact of the matter is, of course, that it is impossible to set forth any business methods of universal application. What is appropriate or successful in Chicago may have no application in Boston. Methods which would be profitable in New York might be unproductive in Savannah or Kalamazoo. In short, it is obvious that the method must be evolved by the man to fit the special requirements of his locality, or the needs of the moment, or the clientele he has in view.

How shall a photographer turn himself out of his rut, and begin to infuse modern methods into the conduct of his business? First of all, by realizing the factors which are of most importance in business to-day; his personality, his methods of publicity, the character of his work, and his place of business. These must all play their part, both in creating and retaining business. Here we have points sufficient for our talk; let us try to cover them.

There can be no doubt about the great influence of a man's personality in his business. Photographers have been very much at fault here. They keep themselves too far behind in the social and business life of their cities. They confine themselves too closely to the mere following of their specialty, and their horizon is too often bounded by things which pertain to "cabinets," at so much per dozen. The successful photographer, or the photographer who would be successful, should take a wide and lively interest in the affairs of his town, or of a good "set" in that town. This is necessary in order that he may know intimately "who is who," what is about to happen, and what chances there are, day by day, to improve his position in the community, to turn events to good business advantage.

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* A paper read before the New England Convention, at Boston, September 13th.

There is a great deal in the point of view from which you conduct your business, the point of view, that is, which you take before your neighbors. It is not at all difficult, when one is residing in any locality for a year or two, to "size up" the more prominent people in that locality, to tell fairly correctly where they stand, and the estimate they put upon themselves. And you may be very sure that the world will take you pretty much at the estimate which you put upon yourself. If your establishment is obviously behind the times, lacking in attractiveness or good taste, your business stationery crude and out of date, and you are seen to take no part in the public life about you, it is only natural that your townspeople will take you at your own estimate, and conclude that you are a "back number." If we could run over a list of the most successful photographers in the United States, and see them as they are at home, we would find them all men vitally interested in the life and progress of their towns, wide awake to every possible advantage which this or that turn of events may bring about, scrupulously careful about their personal appearance, and of their standing in the community. Careful, also, about the appearance of their places of business. In fact, you will find them known among their fellow-citizens as men of intelligent enterprise and public spirit.

Let us now take up the detail of the place of business. It is most important that your public rooms should be not only clean and attractive, but also easily accessible, and properly placed before the public eye. There is, of course, no excuse whatever for dirt or uncleanliness in the photographer's establishment, but photographers do not always realize how unattractive their places are. They grow accustomed to the accumulation of rubbish, properties and discarded specimens, which naturally gravitates about a studio. It does not seem to occur to them to look at their places from the point of view of my lady, who is careful about her dresses, and who has little pleasure in visiting the average studio, because it is such a "dusty, dirty place." It would be well for photographers to regard their public rooms from the point of view of the physician (I won't say dentist) or the picture gallery. Let us have rooms which are evidently designed to give the visitor a good impression of the profession to which they are devoted, which will give the visitor the impression that the photographer follows an art rather than a mechanical trade.

This brings us to the important matter of display. Perhaps I am wrong, but I think that photographers overreach themselves in this detail of display. Wherever one finds the photographer's place of business, the conglomerate collection of specimens of his work at every turn, in all sizes, colors and degrees of freshness, gives one a very "cheap" idea of photography—the idea of the machine rather than of an art. There is room for better methods here, of which, however, I have little time to speak. A small but choice display, changed every day or week, will give the public a much higher idea of your profession, and the risk of showing poor or mediocre work will be largely avoided. Let me suggest to you that it would be well to make your displays not only smaller, and more carefully selected, but also more educational. Thus there can be little doubt but that the public would be interested in a series of little exhibitions giving, one after the other, a display of the advantages of carbon, platinotype, sepia prints, Aristo-Platino, and plain glossy prints in portraiture. A small descriptive card accompanying each display would, of course, add to the interest of the exhibit. Special displays of this kind, grouped around novel or practical ideas, will, doubtless suggest themselves to you. For certain classes of trade a card, embellished with a photograph of course, inserted in the street cars, would be a profitable method of display. Small exhibits in the public places of your towns also suggest themselves as likely to help in creating new business. It would be possible to talk all morning, or a week, about this one detail of the photographer's display, but I leave it to you, only emphasizing the desirability of making your display produce a better impression than can result from the average exhibit of the average gallery.

After display comes the question of methods of publicity. Here again, the photographer is lamentably behind his times. Take the very simple matter of the photographer's stationery. Every communication you send to your customer is as important in a business way as a personal visit. When you write a letter to a customer, you should be as careful about the appearance of that letter as you would be about your own personal appearance if you were to meet your customer. Glancing back over the business letters received from professional photographers of every class during the past ten or eleven years, an experience covering many thousands of letters, I cannot recall more than a dozen instances where the printed matter was worthy either of the photographer or of his profession. Your letter heads, envelopes, announcements and price lists, should reflect individuality and taste equally with your portraiture. Many photographers excuse themselves in this matter by saying that they have not the gift of putting such things in shape. Now-a-days, however, when every town has its artistic printer, or its advertising expert, this detail of appropriate business stationery should not present any great difficulty. The same thing applies to the "booklet"—the little book which photographers issue to advertise their studios and capabilities, and acquaint possible customers with the little details which need attention in preparing for a sitting. It is astonishing that this method of publicity has not been more generally used. No profession lends itself so completely to the preparation and use of a dainty advertising booklet as that of the photographer. Thus, let us suppose, that you have prepared for you a booklet such as I have indicated. By leaving two or three pages blank, and mounting thereon for one effort a sepia print, for another effort a carbon miniature, and for another effort a platinum vignette, you have good material for three profitable excursions among the best people of your locality. And you may be sure that a little booklet, carefully written and printed, and illustrated this way, will not be thrown aside. Several papers dealing with the preparation of such a booklet have been published in the journals of late, and I would advise you to look up these papers and lose no time in putting into circulation a booklet adapted for the trade you are seeking. If you cannot prepare the booklet for yourself, you will do well to get hold of someone skilled in the preparation of advertising matter, and pay him whatever is reasonable for the work.

About methods of handling customers I can only give you a word or two. There should be more elasticity in dealing with your people than perhaps many of you have been accustomed to. Thus, the old-fashioned notions of prohibitory notices regarding the return of proofs, penalties on resittings, too much insistence about prepayment, etc., all these things are out of date, and have long been discarded in progressive studios. If you will look at these things from the point of view of the customer, you will see that they are against, rather than for, the growth of the business—clumsy methods of attaining certain ends which can just as surely be secured in more pleasant ways. A clever receptionist can make sure of payment, get all the proofs returned, and manage the detail of resittings without these clumsy methods of the old times.

Let me not forget the receptionist—generally, and preferably, a woman of refined and gentle manners, well informed, and specially gifted in handling people of varied dispositions. A woman especially who knows how to handle other women, and who can make herself beloved by the children who may visit the studio. A woman, also, who in a thoroughly suave and dignified way, knows just how to handle the young man of the period, so that the photographer may be glad to have his business. What a power the receptionist is when properly chosen and trained. It is not too much to say that she can both make and destroy a business, if she has the amount of discretionary power given to her in some galleries. Let me put my finger here upon the mistake made in many galleries when choosing a receptionist. A photographer often values his receptionist according to her power of persuading more business than the customer intended in coming to the studio. The skill to do this is indeed worth a deal, but the knowledge when and when not to use that skill is altogether more valuable. This "working" of the customer should be done with the greatest discrimination. People quickly jump to the fact that they are being "worked," and if it is overdone they will avoid the studio where such practice obtains.

Let me relate to you how this practice of "working" the customer is followed in one of the largest studios of the West. The receptionist of that studio has a card index containing the names of all the most prominent people of the city, their financial standing and their circumstances. When a customer comes to this studio the receptionist skillfully holds him or her in conversation until an assistant has given her the card containing the record already mentioned. According to the information given by the card the customer is thereafter systematically "worked," both at the desk and in the studio. It is unnecessary for me to detail how this 'working' is done, but the system is worthy of a word or two. In so far as this and similar methods are useful in aiding the photographer or his assistants to handle his customers to advantage they are praiseworthy. But where they are "worked" without the most careful discrimination they will, I believe, speedily degenerate into blackmail and end in ruin. Especially is this likely to happen in a studio where commissions are given to the employees for all work which they may influence or secure over and beyond that which brought the customer to the studio.

The use of the card-index system, by the way, occupies a special place among business methods of to-day. I have not time here to go into it, but I would urge upon you the advisability of looking into and getting a good grasp of the advantages of this system, both in labor saving and in "following up" lists of customers and similar uses.

Now, let us take an actual instance illustrating many of the points I have mentioned and contrast modern with old-fashioned methods. Some time ago I had a visit from a friend, who had for some years resided in a flourishing western city. As an amateur he had made a specialty of portraiture, and naturally his ideas gradually turned towards the making of portraits in a professional way. His moves were most interesting. His position in his town had given him an intimate acquaintance with the best-known men in the business and social life of the place. To complete this acquaintance for business purposes, he cultivated a little group of women journalists who had charge of the "society reporting" for the local papers and won their interest and help. When he was ready for business they could tell him just who was at the top in current events, could furnish him with lists of desirable patrons, and inform him beforehand of social affairs which he might possibly be able to turn to business advantage. He saw that the local professionals (being asleep) had clung to their down-town studios, were neglectful of modern ideas, and that their places of business were inaccessible, guiltless of elevators or similar conveniences. He perceived, too, that their point of view was too "cheap" for the best people of that town, and that consequently much of the most desirable work was going to a nearby city. What did he do? Selecting a corner lot in the residence section, away from the dust and bustle of the town, he built himself an artistic studio, kept his rooms all on the ground floor, made sure of a spacious skylight and public rooms with ample room for display; got an expert to prepare a campaign of advertising or publicity to cover the first year; inaugurated, to accompany this campaign, exhibitions of work at the studio; placed, month after month, by means of his society lists, attractive announcements of his studio, with specimens of his work, among the desirable people of his locality; would make nothing but platinum and carbon portraits, and fixed his prices at $10 and $15 for a dozen cabinets. What happened? He succeeded from the start, and to-day is building the best business in his town, while the old style-professionals are grubbing along, complaining more profusely than ever.

Some days ago the business methods employed by Strauss, of St. Louis, were under discussion. One who knew Mr. Strauss and his methods intimately said : " He has a beautiful place, a staff of clever assistants, and he does beautiful work ; but it is my opinion that the biggest feature of his establishment, the thing which impresses people most when they visit the studio, is the wonderful courtesy which is extended to all visitors, whether they come for business, curiosity or pleasure. You know, of course, that the Strauss Studio is one of the show places of the town, and that people have got into the habit of taking their friends to see the studio as a local institution. Mr. Strauss has three assistants entirely devoted to the work of showing visitors about his beautiful rooms, making his customers comfortable during their stay there, etc. Then his "convenience department" has been a big feature. There are no banks or express offices within a mile or so of the studio. Seeing this, Mr. Strauss created a department where the people of his locality could obtain small change or have their checks cashed, or leave parcels for collection by the various express companies without the bother of sending into the city. These conveniences, and everything else about the gallery, are open to the public, and the popularity which Strauss has gained in St. Louis has been won quite as much by his generous hospitality and courtesy as by his portraiture." This, of course, refers to the gallery which was burned down some months ago. I merely relate the conversation to you so that you may have the suggestion which it offers.

In this way we could go on from sunrise to sunset, discussing the thousand and one points at which modern methods, or intelligent enterprise along definite lines, might be advantageously applied in professional photography. I have, however, wearied you sufficiently for one sitting, and, therefore, make an end, with my thanks for your patience and attention.

PRACTICE IN CARBON PRINTING.

By Dr. E. Vogel.

THE fact is gradually becoming realized, that no printing process will give finer gradations of tone, than carbon or pigment printing. A few points from the practice of carbon printing may, therefore, be welcome to those interested in the process. The chromatizing of the paper, on account of its low sensitiveness in moist condition, can be done in daylight, which has the advantage, that all air bubbles can be detected at a glance. The paper is put into the bath, film side up, and is turned over as soon as it becomes somewhat flexible. To avoid air bubbles, a wide, soft brush is run over both sides of the paper, while in the chrome bath. To remove the air bubbles from the film side only is not sufficient, as bubbles on the reversed side of the paper may just as well cause defects. It should lay film side down, when taken from the bath. If the film side is up, the little particles of dust, which are unavoidably floating on the surface, will settle on the film. To dry the paper, it should be squeegeed on a glass plate that has been rubbed over with talcum. If simply suspended, it will curl and not adhere well to the negative during printing, so that out-of-contact spots can hardly be avoided.

After the paper has been squeegeed upon the glass plate, all chrome solution adhering to the paper should be removed with a piece of soft linen. If left on the paper, it will cause stripes and spots upon the prints. The drying must be done in the dark, preferably in a roomy, well-ventilated and moderately warm place. The quicker the paper dries, the clearer and more brilliant it will print. Slowly dried paper will give foggy and monotonous pictures. The dry paper may be left on the glass plate, until used, or it may be rolled up and left in tin boxes. Fresh paper, giving always the best results, no more paper should be prepared, particularly in summer, than may be required for the next two days.

Regarding the chrome baths, their strength should be regulated according to the character of the negative. Strong negatives give better results with paper prepared in strong chrome baths ; thin negatives, on the contrary, with paper prepared in a weak bath. For normal negatives a 3 per cent. bath, increased in winter to 4 per cent., will give the best results, while, for thin or even flat negatives, 1 per cent. is sufficient, and for negatives very rich in contrast, it may be increased to 5 per cent., or, in exceptional cases, to 6 per cent. The quality of the carbon paper is also of great influence. Paper containing much pigment will print harder, and will, therefore, generally require stronger baths than those with less pigment. Instead of preparing the paper in a weaker chrome bath for thinner negatives, paper prepared in baths of normal strength may be used, if tissue paper is placed over the printing frame. In such a case the photometer must be covered with the same paper, as otherwise it would not show the correct printing degree. The photometer paper must always be prepared in baths of the same strength as the pigment paper to be applied.

For diapositives the bath should always be weaker than for paper pictures. One to 2 per cent. in summer, and not more than 2 to 3 per cent. in winter, is sufficient. The chrome bath should be kept in the dark when not in use, as it will soon take on a brown color from the organic substances of the pigment paper passing into it, if exposed to light. Baths that have become brown should not be used any more, as they will have a tanning action upon the paper on account of the chrome oxide salts which they contain. Such paper will give foggy prints.

A defect which happens quite frequently in pigment printing is the appearance of fine air bubbles in the pigment film of the developed pictures. The cause of these bubbles is, that the water used in squeegeeing the pictures contains a good deal of air, particularly in winter. The air held by the water, which was absorbed by the pigment film, escapes when the prints are put in warm water for developing, and thus causes the formation of bubbles. To avoid this defect, it is recommended to boil the water before use, whereby the air escapes. The water is then left to cool off again before using.

When developing, the air bubbles arising from the paper have to be removed under water with a soft camel's-hair brush, and likewise, after stripping off the paper, all air bubbles adhering to the pigment film must be removed. If this is neglected, dark marks will appear on the paper, which cannot be removed by even prolonged treatment with warm water.

If a diapositive is to be developed, work can be facilitated by putting a wooden clip or clothes-pin at each corner of the plate after the pigment paper has been stripped, and air bubbles that may adhere to the pigment film have been removed, whereupon the plate, with the film downward, remains in the warm water until the picture is fully developed. Care has to be taken, however, that no air bubbles form under the plate. The clips prevent the film from touching the bottom of the tray, and protect it from scratching. In this way a number of diapositives can be developed at the same time.

As fore-preparation for glass plates, half per cent. collodion is frequently used. This support is very convenient, but it has the disadvantage, that the pigment film will peel off from the glass sooner or later. This is particularly the case, when the plate had been rubbed with talcum before preparing with collodion. This peeling off can be avoided if the plate, before coating with collodion, is prepared with a thin chrome gelatine solution, such as is used frequently for collodion plates in the negative process.

The best fore-preparation for diapositives is however doubtless the chrome gelatine support,(18 grams gelatine, 25 cubic centimeters chrome alum solution 1:50, 600 cubic centimeters of water, and, in case the 30 to 40 degrees warm gelatine solution should become too thick, the addition of glacial acetic acid until the solution has become liquid again); but this support is not applicable, if the diapositives are to be subsequently intensified, or toned with permanganate of potassium, with iron salts and gallic acid, or with red prussiate of potassium, because the chrome gelatine film will also color in this treatment, so that the whites of the diapositive are lost.

In such cases it is, therefore, best to leave off the support entirely and apply to very carefully cleaned (acidified) glass plates. Different methods are known, for intensifying or toning pigment diapositives, but there is very little use made of them. Only the well-known intensification by flowing the diapositive with permanganate of potassium, whereby a yellow-brown tone results, superoxide of manganese depositing in the gelatine film, is frequently applied. The tone so obtained cannot properly be called handsome. For this reason the manganese intensification is only applied in the production of duplicate negatives by means of pigment printing, but not for transparencies.

In the following I will explain three methods, which are suitable for an easy and reliable toning and intensification of pigment diapositives for transparencies and projection pictures. Blue-black tones are obtained after a process, recommended by Monckhofen in 1876, as follows : The diapositive is first put into a bath of 40 grams of sulphate of iron* in 1,000 cubic centimeters of water, and is left therein for a few minutes, whereupon it is washed and then bathed in a solution of 20 grams soda and 1,000 cubic centimeters of water. After this the diapositive is washed again and put into a solution of 10 grams gallic acid in 1,000 cubic centimeters of water, in which it is left for a longer or shorter time, according to desired strength, and then it is thoroughly washed.

The tones so obtained are very handsome, and particularly suitable for projection pictures and transparencies, being constant to light. Bluish tones (Berlin blue) can be given to the pigment positives by bathing them first for a few minutes in a 5 per cent. chloride of iron solution, after which they are rinsed† and put into a 5 per cent. solution of yellow prussiate of potassium, and finally they are well washed. The longer the diapositives are left in the chloride of iron bath, the bluer is the tone obtained. The operation can be repeated, if the blue coloration is not sufficiently strong. This blue coloration is very suitable for marine views and so-called moonlight scenery.

Yellow tones (chrome yellow) are obtained by bathing the diapositives in a nitrate of lead solution (4:100) short rinsing and bathing in a solution of yellow chromate of potassium (or a solution of red chromate of potassium, to which is added as much ammonia as is required to give to the solution a strong scent of the latter).

Green tones are obtained, if the first blue-toned pictures are afterwards toned yellow, or by treating diapositives produced with blue pigment paper with nitrate of lead and chromate of potassium as above mentioned.

The most intense toning is always obtained by previous drying of the diapositives. The film will then absorb more of the solutions, so that naturally stronger colorations will result than with the still moist diapositives, whose gelatine film has been swelling in the water, and has, therefore, less tendency for further absorption. All these processes act simultaneously, toning and intensifying, and regard to this fact should be had in printing. The diapositives must also be a little thinner than otherwise, if the toning is to be at all forced. For paper pictures with single transfer the above toning processes cannot be applied, as the paper will absorb the solutions and color, but there are papers for pigment pictures with double transfer.

The pictures are developed upon glass plates, rubbed in with talcum and flowed with 1 per cent. collodion. White porcelain glass is preferable, as on this the colorations can be well seen and judged, and after toning the transfer is made in the usual way upon double transfer paper. The high gloss of the pictures is here very disturbing, particularly for larger sizes. To avoid this, the pictures may be developed upon matt surface glass, which has been flowed with a thin rubber solution before preparing it with 1 per cent. collodion. The transfer from the glass to the double transfer paper is done in the well-known way. The pictures can easily be stripped from the glass, and fine matt prints are obtained.

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* Eder recommends in place of the sulphate of iron the durable ammonia-iron-alum.

† By too long rinsing the iron salt is washed out of the pigment film to a great extent, so that, when treated with prussiate of potassium, no sufficiently strong blue coloration will result.

By a clever combination of the foregoing methods in connection with careful use of the varying qualities of the original pigment diapositives, which always govern the toning and influence the character of the picture correspondingly, a large number of different tones can be obtained, so that in pigment printing a large number of colors are easily possible.

Translated by
HENRY DIETRICH.

GLEANINGS FROM GERMANY.

BY HENRY DIETRICH.

NEW Reducer for Negatives, by R. Namias.—In place of the ammonia persulphate, R. Namias proposes the following mixture, which attacks most actively the dense parts of the negative:

Permanganate of potassium	0.5	gram.
Sulphuric acid	1	cubic centimeter.
Water	1,000	cubic centimeters.

This solution keeps for a long time, and may be applied to the negative after fixing, even if the same has not been thoroughly washed, as it destroys all traces of fixing soda by oxidation. During the reducing process the tray must be kept in motion.

If the picture film should receive a brownish coloration by the precipitation of a small quantity of bioxide of manganese, a one-half to 1 per cent. solution of oxalic acid will remove the stain

Iron solutions for the oxalate developer are well preserved, and will remain unchanged for months, even if the bottles are not completely filled, by adding some oil of cloves or cinnamon to the solution. A few drops of either, with 2 cubic centimeters of a 40 per cent. formalin solution, are sufficient for 500 cubic centimeters sulphate of iron solution.

Decorative Photography.—For this purpose, either a carbon print is used, which is transferred to plate glass, and the back is covered with matt leaf gold, or a reproduction from an engraving or woodcut may be employed. The picture is preferably made upon a dry plate, because the latter softens the sharpness, and particularly that of the woodcut. It is not the purpose of the reproduction, to retain the sharp effect of the woodcut, but principally to obtain handsome effects. Chrome gelatine is poured upon a leveled glass plate, this is dried in the "Lichtdruck" oven, and is then exposed under the reproduction negative. The following formula is good:

Nelson gelatine No. 2	10	grams.
Bichromate of potassium	3	"
Chrome alum solution, 1 per cent.	5	cubic centimeters.
Distilled water	120	" "

The drying is done at 30 degrees R. After two hours, the plate is not only dry, but has sufficiently cooled off to be printed from. After printing, which lasts three to five minutes in the sun, or thirty to forty minutes in diffused light, it is washed in ordinary water, and in light a 2 per cent. nitrate of silver solution is poured over the same. The light is left to act until the print has obtained the desired coloration when it is removed to the darkroom and after drying in the dark the back is prepared with gelatine, upon which genuine gold leaf is laid. If the gold is matt, it will give a magnificent picture effect, the strong gloss of a picture interfering considerably with the same. Bronze should never be used, as it deteriorates very quickly.—C. FLECK.

A New Bichromate Printing Process.—Dissolve 15 grams bichromate of potassium and 7 grams sulphate of copper in 125 cubic centimeters of water and filter the solution. It will keep for an unlimited time. For the purpose of sensitizing, pour a small quantity of this solution into a glass, and with a pretty thick water-color brush spread a film as evenly as possible upon the paper (plain paper, or well-sized printing paper, free from wood fiber and with smooth surface). This must be done in subdued light. It is best to fasten the paper with tacks to a drawing board, hold it in slanting position, and proceed like an artist who wants to lay in a sky—that is, commence from above and run the always well-filled brush in horizontal lines to the lower edge of the sheet. The superfluous liquid, which has collected here, is removed with blotting paper; the paper is then dried as quickly as possible near a stove, taking care that it keeps its original position. The whole success depends upon the rapidity of drying. The dry paper should have a dark yellow color. It is exposed in diffused light under a negative in the printing frame, and prints quicker than the silver printing papers. Print until all details can be well seen and the shadows have become dark brown, while the high lights have still the original yellow color of the paper. The fixing is done by washing in pure water. This operation lasts ordinarily one hour, but if a little alum is added to the water, the process will be finished in about ten minutes. The alum should be well powdered. The picture has now to be developed, which is done with a strong, freshly prepared solution of pyro. The details will intensify by this process, the shadows assume an agreeable tone, and in a few minutes the picture is finished; it should then be washed for five minutes in running water. This printing process is particularly suitable for large negatives. If the exposure was correct, the finished picture will have a handsome, artistic appearance, and with regard to cheapness and rapidity the process is unsurpassed.—M. BENHAM.

WAR AND THE CAMERA, WITH A TELEPHOTO LENS.

By H. C. Shelley.

THE writer of the following article, which is the beginning of a series of articles being published in *The Amateur Photographer* (English), demonstrates by the illustrations accompanying it that telephotography is not only theoretically, but is also practically, an accomplished factor in the proper pictorial rendering of history. Mr. Shelley refers to one important advantage to be had with the telephoto lens that we believe has not been widely exploited heretofore, and that is in the fact that, the camera being operated at a considerable distance from the field of the picture, the subjects being photographed are quite unconscious of the fact and the poses are natural and unaffected. We regret that it is impossible to reproduce the really exquisite illustrations that accompany this article.—[EDITORS.]

Mr. Shelley says: "When I was commissioned to proceed to the front last October, not to assist Thomas Atkins in 'wiping something off a slate,' but to impress a few things on plates and films, the question of photographic outfit naturally came in for serious consideration. It had also to be hasty consideration, for in the end I had only some forty-eight hours in which to make my preparations. But, urgent as was the necessity for a speedy departure, I determined, if possible, to include a telephoto lens among my kit. Thanks to the keen personal interest of Mr. T. R. Dallmeyer and the business-like alacrity of his staff, this consummation was attained, and enough time was left to enable me to receive at Newman street a brief lesson in the art of telephotography.

"There are hazy ideas in the air as to what a telephoto lens is like. One gentleman, who honored me with a magazine article on my doings at the front, explained that my telephoto lens was used 'in conjunction' with a kodak. As the particular telephoto which Mr. Dallmeyer constructed for my use consists of a portrait lens and telescopic attachment, with a diameter of 3½ inches and a length of 10 inches, it will be seen how feasible would be the use of such an instrument 'in conjunction' with a kodak! No, it was to a half-plate camera of solid construction and long extension that my telephoto lens was adapted, those two qualities, and especially the latter, being necessary in any camera which is to be used with that lens. Also there is another necessity, and that is a rigid tripod, for the great magnification of this lens transforms the slightest vibration of the camera into a hopeless blur of the image on the focusing screen.

"Practical photographers will probably be interested in several other points relating to the use of the telephoto lens. It may be pointed out, then, that the user of this lens is not restricted to one power of magnification. There is a draw-tube at the back of the telescopic attachment by which the power can be varied, and further range is provided for by an extra lens of higher magnification. While with some lenses it is not absolutely necessary to examine the focus of a picture after the final stopping-down, that precaution is a *sine qua non* in working with the telephoto. Happily, however, even with the smallest stop there is always ample light by which to perform that operation. But the focusing has to be done with extreme care. This manipulation reminds me more of working with a microscope than of focusing with a lens of the ordinary type; the high magnification renders the image on the screen sensitive to the slightest turn of the focusing screw.

"All these considerations will give emphasis to the necessity hinted at above for a rigid tripod. They also show that the camera must be allowed, after the withdrawal of the dark-slide shutter, to come to a condition of absolute repose ere the exposure is made, even when an exposure shutter is used. When the exposure is made by means of a lens-cap, the operation has to be carried out with the greatest possible care. When the telephoto-exposed plate is taken into the darkroom the photographer needs to be apprised of the fact that its behavior in the developing dish will approximate to that of an over-exposed plate; thus forewarned he can act accordingly and not with fatal haste.

"Perhaps in the minds of some haphazard workers the necessity for these precautions will constitute an argument against the use of a telephoto lens. They have little conception of the power they are ignoring. Apart altogether from the fact that this lens renders possible the securing of photographs which are utterly outside the range of the ordinary lens, the uses of the telephoto lens in the domain of pictorial photography are beyond estimation. Its value in portraiture has already been demonstrated in these pages; its capability for exquisite results in landscape work, and for the obtaining of natural posing in figure studies, has hitherto dawned upon very few. May I, without egotism, insist that the telephotos which accompany these lines illustrate something of that capability? These three photographs were all secured during the actual fighting at the battle of Magersfontein, at distances varying from 300 yards to about a quarter of a mile, and the fact that I was able to keep my camera so effectually in the background explains why the soldiers who figure in the pictures were quite unconscious of being 'taken.' Then, too, let the picture of the base of the war balloon witness with what softness and atmosphere the telephoto lens can interpret a landscape."—It is impossible to reproduce these illustrations and do them justice.—[EDITORS.]

"Two circumstances militated against the wholesale use of the telephoto lens during such a war as that in South Africa, and the heat was responsible for both. So exhausting are the sun's rays that it is a physical impossibility to carry a camera equipped with such a lens hither and thither for a whole day over a widely extended battlefield, and then the mirage or heat-haze created by those fierce rays render it almost impossible to tackle subjects at a much greater distance than a quarter of a mile. But, notwithstanding those limitations, it may be claimed that the telephoto lens has secured some pictures which are unique in the annals of war photography. And, under more favorable conditions, I see no reason why the lens should not achieve results which will throw all its past triumphs into the shade. Perhaps, too, our War Office will one day awake to its value from a military point of view, and then it may be employed under such conditions as will demonstrate how great a power this remarkable lens has placed in the hands of photographers."

The editor of the *Amateur Photographer* says in a foot-note to the above article: "Mr. Shelley's achievements with the camera in the actual field of warfare are unique. His own characteristic integrity, backed by a rare enthusiasm, gives an especial value and guarantee of genuineness to his photographs, and it is easy to see from his writings that he is on the verge of prosecuting a crusade against the special artists whose illustrations of war scenes are, he alleges, usually made miles away from the actual scenes and founded merely on hearsay."

EXPRESSION IN PORTRAITURE.*

IT has been well and truly stated that facial expression is governed by the inner workings of the mind, and there are but few photographers, who make a special study of portraiture, who do not know the immense importance attaching to the rendering of pleasing and natural expressions in the faces of their sitters. To many this may appear a simple and easy matter, but the fact is, it is one of the most difficult things a portrait photographer has to cope with, and in numberless cases, the most exquisitely executed photographs fail to give satisfaction, by reason that some particular expression, which may almost be termed "one's individuality," is not strongly apparent in the picture. That sitters themselves are responsible for many of these so-called failures is beyond all doubt, for the number of people presenting themselves to be photographed who lose their individuality in expression the moment they enter a studio, is much greater than many imagine. Then, again, it is quite surprising how some sitters are influenced towards liking and disliking the expression in their pictures by the strictures they hear passed upon the photograph on the part of their friends, for rarely indeed will two individuals be found who think alike on such a matter. One will say, "Oh, it is a good and speaking likeness"; while another will declare, "No, I don't like that, it is not your expression at all"; and the poor photographer is censured, of course. Or, very probably, some amateur friend, who, of course, knows so much about photography, will be asked his opinion, and notwithstanding that he never took a studio portrait in his life, will, out of the depths of his knowledge, charitably condemn the production on the score of expression, and possibly faulty retouching. If sitters, and their friends who so lightly pass censure on the photographs they examine, would only realize the fact that so much depends upon the sitters themselves in the matter of expression when being photographed, how much better would it be for the poor photographer and themselves also! Yet no, somehow the public have come to expect so much from a photographer, that he is called upon to make crooked noses straight, plain people to look pretty, and to cover up numberless failings.

No doubt, on the other hand, as is quite well known, a clever photographer, by following out certain well-recognized rules and resorting to numerous subterfuges, can do something towards covering up defects on the part of his sitters' appearance; but, generally, his power in this respect is limited, and, more often than anything else, consists of carefully posing those who require special treatment of this kind. Strive as he may to conjure up natural and pleasing expressions on the faces of some sitters, he is met by sheer failure, simply by reason of the fact "that from some cause or other beyond his ken, the inner workings of the mind on the part of the sitter are such as to make it impossible for him to yield a pleasing and natural expression." That there are very many individuals thoroughly sensible to the importance which attaches to themselves in this respect when being photographed is, fortunately, quite true, for now and again we do meet with those who exclaim, "No, I won't go to-day, the market has gone against me in pigs." Or, perhaps, it may be Miss So-and-So has seen her best young man in company with her hated rival on her way to the studio, and at once changes her mind by resolving, "Not to-day. I could not look happy if I tried." It is such little incidents as these that militate against success in portraiture to an extent those outside the sphere of studio work have no conception of. Expression in portraiture does not mean a silly, inane giggle, or even a forced laugh, such as sitters are wont to put on at command. This is purely artificial or spurious, and, no matter how desirous he or she may be to yield a pleasing or natural expression, unless it is governed entirely by the inner workings of the mind, the will is powerless to produce it.

It has been said that much may be done in posing to make or mar a picture. This can be strikingly exemplified by any one who cares to go to the trouble of carrying out a few well-recognized rules in posing, and, when a good model is provided, much may be learned from this alone, *i. e.*, without any need of exposing sensitive plates, for the model's appearance in varying positions will be at once apparent

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**The British Journal of Photography*, September 7, 1900.

and highly instructive. Perhaps no more striking examples of the wide range in appearance capable of being introduced in a picture are to be found anywhere than those from the pen of E. K. Hough, written many years ago. These instructions should be read by all photographers who aspire to the production of good work in portraiture. In the numerous examples given, this clever writer shows, by merely altering the position of the head and body to that of the camera, how a very wide range of contrasts are produced, such as, when the body, head, and eyes are in a certain position to the camera, the pose can be made to yield an easy, animated appearance, and then, by slightly altering it, a greater amount of activity and interest is introduced. Then again, other positions are described, in which the model is caused to yield an absorbed or deeply interested appearance, verging into anxiety, surprise, or other similar emotions, according to the face and action of the sitter, or again, by slightly altering the position of the eyes to the head and body, an uneasy, insecure, jealous, watching appearance is unpleasantly introduced. Then, again, positions are described which yield an easy, direct, sincere, manly attention, and these, in turn, by further changing the position of the sitter, give place to shyness, coquetry, suspicion, according to facial action; and, finally, by altering the position of the head and eyes upwards, an appearance of adoration, spiritual contemplation, or supplication is introduced, according to the other accompaniments, while, by further changes still, it is easy to yield a cowardly, shrinking, or sinister, watching appearance of suppressed anger. As stated, it is not necessary that a student in photography should resort to the exposure of sensitive plates to see how these results are achieved, although a series of photographs taken under different conditions are undoubtedly highly valuable, and prove instructive, when special effects are desired in a picture. Much of this sort of thing is noticeable in some of the works of our great painters, and is traceable also in sketches by clever artists, and it is quite surprising what effects can be produced by closely studying the art of posing.

It has been well said that there never was a face which could be deemed absolutely expressionless; but, on the contrary, there is always present some pervading individuality of character, and it is therefore the photographer's duty to carefully study these peculiarities, and then, by the most effectual method of posing, endeavor to portray the likeness. To do this satisfactorily, not only must attention be bestowed upon posing, but the utmost care observed in so lighting the sitter that the most satisfactory results are obtained. The subject of lighting is one of great importance in portraiture, perhaps quite as much so as that of posing and the yielding of expression. It will be found also that a very large number of people recognize the truth of the saying, "that every individual has a best side of his face," *i. e.*, one side looks better than the other. Of course, a clever photographer will know how to satisfy his clients in this respect. Noses also are seldom or never found straight, and what in vulgar parlance is termed squinting all come in for special treatment at the photographer's hand.

* * *

INVESTIGATIONS into the causes of the numerous prairie fires in the cattle ranges of Montana and western Dakota seem to show strong reasons for the belief that many of them, at least, owe their origin to the presence of broken bottles that are scattered freely along the trails and wagon roads of that section—evidences of the higher civilization that is opening up the country. It is reported that in many cases the origin has been directly traced to this source, the evidence pointing clearly to the theory that the sun's rays, focused through the curved glass, has caused ignition of the dry prairie grass, from which the fires have spread, and assumed their tremendous proportions before they were discovered.

* * *

All copy for November number must be received not later than October 15th.

THE HANDBOOK OF PHOTOGRAPHY IN COLORS.

THE importance of this new book may be well gauged by the criticisms of the press. The following opinions have been published since the September number of the BULLETIN went to press:

A HAND-BOOK OF PHOTOGRAPHY IN COLORS. By Thomas Bolas, Alexander Tallent, and Edgar Senior. 230 pp., 6 x 9, printed on wood-cut paper, with 100 half-tones and many diagrams. Price, $2; postage, 12 cents. Published by E. & H. T. Anthony & Co., New York, and Marion & Co., London.

We are glad to announce the publication of this important guide to photography in colors. Probably no other subject has excited so much attention during the past ten years or awakened so much curiosity as the possibility of obtaining photographs in color. In this interesting volume the whole subject is clearly and completely discussed by writers whose authority is unquestionable. The various processes are described in plain language, with formulæ and the instructions necessary for their successful working, and the theories on which the methods are based are clearly given from the first to the last step.

It is a book which professional and amateur photographers should want to read and have its information at their fingers' end, and we congratulate Messrs. Anthony & Co. for their enterprise in securing the American sale of a work which is sure to become popular. The book has been well received in Europe, and we commend it to all seeking information upon its fascinating subject.—*Wilson's Photographic Magazine, September.*

A HANDBOOK OF PHOTOGRAPHY IN COLORS. (London: Marion & Co.) Three authors are responsible for this work. Thos. Bolas supplies the general survey and history of the processes, and the section on direct heliochromes on silver chloride. Alexander A. K. Tallent takes the major portion of the book, that on tri-color photography. Edgar Senior provides the section on Lippmann's interference process. The publishers are wise to have thus selected specialists who have devoted themselves to the subjects on which they write. Mr. Bolas' contribution, though brief, sketches the progress of color photography from Ritter to Lippmann, and must be read in connection with the latter sections. The portion dealing with tri-color process is full in the best sense of the word; theory and practice are described and profusely illustrated. The latest processes, such as that of Wood, are not omitted, and the reader is taken lucidly through general principles of light and color, color vision, to the making of the negatives and their reproduction on paper, glass, and in other ways. Mr. Senior says what he knows about Lippmann's process. Though it is not long, it is practical and to the point, and will carry weight with the reader who knows that the writer is practically the only worker in England who has obtained results by Lippmann's method. The conclusion, from a careful examination of the whole book, is that for a long time to come it will remain the standard text-book on the subject.—*The Photogram, September, 1900.*

A HANDBOOK OF PHOTOGRAPHY IN COLORS. From Messrs. Marion & Co., of Soho square, London, W., comes what should prove to be a most useful and comprehensive handbook on the subject of photography in colors. It is divided into three sections—the first, on "Heliochromy and Direct Heliochromes on Silver Chloride," is by Mr. Thomas Bolas; the second, entitled "Tri-Color Photography," is by Alexander A. K. Tallent; whilst in the third, "Lippmann's Process" and "Interference Heliochromy" are treated by Mr. Edgar Senior. At the end of the second section are two appendices on "Color Sensations" and "Screens for Three-Color Work," both by Captain Abney. The whole is liberally illustrated, and has a good reference index, and the book should certainly find a place on the shelves of every practical photographic worker at a time when photographic printing in colors is becoming an unquestionable industrial fact, and can hardly fail to fill an even larger place in contemporary crafts in the very near future.—*The Amateur Photographer, August 17, 1900.*

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Photograph by THUSS.

ANTHONY'S

Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D.

W. I. SCANDLIN.

Vol. XXXI. NOVEMBER, 1900. No. 11

THE NEGATIVE AS A FACTOR IN THE FINISHED PRINT.

THE question of how much or how little work may be done upon the photographic negative, still keeping it legitimately within the field of photography, is one that has caused a good deal of discussion and that seems still to be an open one. We believe, however, that the only alterations allowable under these conditions are those necessary to correct some mechanical or structural defect in the plate itself or such softening or modification of shadows and high lights as may be required to counteract the exaggeration of contrast resulting from the concentration of light on the sitter. It is claimed by some that any amount of working up, by such means as stump and crayon, patches of water-color on the back of the negative, moist color worked into the film side, the cutting away of the film for black backgrounds and half a hundred other more or less feasible methods, are wholly within the limits of good photography, and it is by such claims as these that many photographers who read the various magazines and reports in the daily press are deceived and led into ways that cannot but prove demoralizing to their business.

We believe that the habit of retouching is becoming very much less a custom in the best studios of this country and abroad than it used to be, and that the man behind the camera is coming to depend much more upon his own work than he used to. The evidence of this is to be seen in all the best centers of photography to-day—and it should be so.

Why should the operator be looked upon as the best paid man in the establishment if the results of his skill and experience are to be sacrificed to the retoucher, who, at any rate, until comparatively recent times has been left altogether too much to "his own sweet will"?

The operator strives for a certain effect of lighting on a certain subject; his interest and attention are concentrated upon obtaining it, and he sees, even before the exposure is made, the finished picture as it is his intention that it shall appear. He makes his exposures and develops the plates with all the conditions in mind, and then his control of the work is largely lost and his ideal may or may not be approxi-

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mated in the finished print according to the circumstances in the case.

Is it not for him to insist that his work be respected, and that the prints from his negatives shall hold the qualities of action, lighting and expression with which he endowed them? In this way only may he establish his claim as a photographer and in this way only does the print remain a photograph.

The extent to which dodging has been carried in the work of some amateurs who have achieved distinction, both in this country and abroad, is such that in many cases all semblance to photography is lost and the results appear clothed neither in the habiliments of a photograph, a wash drawing nor a crayon picture. If, as is sometimes claimed, a picture should be so produced as to avoid the hardness resulting from sharp focusing, why should not this effect be obtained by choice of medium upon which it is printed rather than by recourse to tricky development or after treatment? If the view or portrait is properly lighted, exposed and developed for all that the subject contains, it is still capable of being so printed as to give an apparent diffusion of focus which, it seems to us, should satisfy the most fastidious, while anything short of the greatest possible excellence in the earlier or chemical manipulations cannot but injure the truthfulness of the pictorial record.

Let such a negative, for instance, as shows extreme sharpness or definition when printed on albumen or any of the glossy papers, be printed on a rough surface paper of any kind, and the result, which in the first case was perhaps too sharp and hard, will be found soft and atmospheric, in accordance with the grain of the paper and the printing process employed.

The latitude to be found in papers and printing methods is astonishing, and only those who have investigated the subject can conceive of the amount of difference obtainable, under differing treatments in printing, from one and the same negative.

There is a strong co-relation existing between different parts of a landscape or other view, and if in photographing it the negative is so manipulated as to radically change the character of portions without a corresponding change in all, a false scheme of values will result inevitably, and the picture, if such it may be called, will be untrue and unreal. Let the negative, then, record all of Nature that it may, and let it be as truthful a reproduction as possible of the scene or object to be portrayed. If after all our care it fails to record the impression as it was conveyed to our eye, let us destroy the negative and try again, but do not let us think that by handwork, or after treatment of any kind, we shall be able to remake the picture, and still call it a photograph.

The pangs that photography would suffer, were she a sensate being, and could see some of the horrors perpetrated in her name, are pitiful to contemplate, but if the negative is honestly made, and is held in its proper relation to the finished print, for which it was created, and only as a factor in the production of which it has any right to exist, there will be less cause for complaint and less question as to what is and what is not good photography.

Items of Interest

MR. FRANK M. CHAPMAN, whose photographic studies into the bird life of this country have been carried on with great patience, and have resulted in extensive additions to the bird lore in existence, gave a most delightful talk with lantern slide illustrations before the Linnæan Society of New York on October 9th. Mr. Chapman explained the methods by which many of his most interesting negatives were made, and described some of the difficulties under which he labored. The work that is being carried on by the aid of photography along the lines of natural history is most important and cannot but be of deep interest to those engaged in it.

* * *

A NEW astronomical station is about to be established by the Harvard Observatory on the island of Jamaica, W. I., an important feature of the work planned for it being astronomical photography. The principal instrument to be used in this work is a long-focus horizontal refractor, with a 12-inch aperture and a focal length of 135 feet. This type of telescope is stationary, with a mirror at the end reflecting any portion of the sky which it is desired to observe. Professor W. H. Pickering, who will have charge of the station for the present, is reported to have secured with this instrument the smallest object, angularly measured, ever obtained on a photographic plate. This was a perfectly clear image, only one second in diameter, of a star. How small this is may be partially conceived when one realizes that a spot an inch in diameter held at the distance of 20 inches from the eye has a diameter of 10,000 seconds. Much interest centers in the investigations to be carried out with this instrument under Professor Pickering's careful direction.

* * *

IT is reported from San Francisco that the city government is about to install a complete photographic gallery on the roof of one of the city buildings, to be used in connection with the Bertillon system for the identification of criminals. This system, as is well known, has met with great success, particularly abroad, where it was originally suggested and where it has doubtless received the most attention.

* * *

THE X-ray is said to have been used by the queen of one of the southern continental countries in a recent endeavor to induce her ladies-in-waiting and the various women of the court to abandon tight lacing. Many of the ladies in question were photographed by means of the X-ray, and the deformities shown were used as an object lesson, with how much success, however, is not stated. The same matter has been taken up by the minister of public instruction in Roumania, and an injunction has been issued by the government ordering all lady principals of girls' schools to forbid scholars of their schools to wear corsets in the future.

◆

The *Amateur Pointer*, a monthly journal for the beginner and amateur, which has met with high favor among its subscribers, announces a print competition in which $100 in gold is to be distributed as prizes among several classes, the entries to close January 31, 1901. This is an innovation in the policy of the *Pointer*, and a large number of entries is looked for. Full particulars may be had by addressing the *Amateur Pointer*, 122 Fifth avenue, New York City.

◆

We are in receipt of a booklet announcing the opening of the Guerin College of Photography, at St. Louis, Mo., Mr. F. W. Guerin being President, Felix Raymer, Manager, from the examination of which we learn that all branches of studio work, including lighting, posing, grouping, flash-light, retouching, etching and modeling, dark-room and process work, printing and toning, finishing and reception-room methods will be treated in a thoroughly comprehensive and practical manner under an able corps of assistants. This is a new departure on the part of Mr. Guerin, in which the Bulletin wishes him all success.

◆

An opening competition is announced by the Blairgowrie and District Photographic Association, of Blairgowrie, Scotland, to be held from the 14th to the 19th of January, 1901. This is the third international exhibition held under the auspices of this Club, and the work is divided into a number of classes, several of which are open to all, and two open to professionals. A silver and bronze medal and a diploma are offered for competition in each class. Full particulars may be had by addressing John B. MacLachlan, or D. G. Monair, Honorary Secretaries, Blairgowrie, Scotland.

◆

We note with pleasure the names of two American photographers who were awarded gold medals at the Paris Exposition—Mr. C. E. Bolles, of Brooklyn, N. Y., and the Baker Art Gallery, of Columbus, O., being the fortunate ones.

◆

An interesting sign of the times is to be found in the fact that photographers seem to be waking up to the advantage of advertising. The Bulletin is in receipt of a very dainty invitation to an exhibition at the studio of George B. Sperry, of Toledo, O., consisting of a most interesting collection of artistic photographs of babies and children, the list of exhibitors numbering many of the most prominent children photographers in the United States. Another announcement of a somewhat similar collection comes from George M. Edmondson, of Cleveland, O. This is an example that may be followed to advantage by almost any studio in the country.

* * *

A VERY interesting series of experiments have lately been carried out by Dr. J. W. Kime, who, while studying the subject of tuberculosis, and its cure by sunlight, is said to have made the curious discovery that the sun's rays may be passed through the human body, even in its thickest part, at the chest and shoulders—with sufficient actinic energy to make a contact positive from a photographic negative. Reports so far at hand seem to show that these experiments were carried out with great care and that the results are genuine, although it would appear not to be a difficult matter to arrange, if it were desired to obtain this result by specious methods. Further information is awaited with interest.

* * *

LANOLIN is said to be an excellent remedy for bichromate or phosphoric poison. It should be bought in the original package, or 1-lb. can, as it then is in full strength, and should be used freely as a salve. Lanolin is a product obtained from the wool of sheep.

THE PHOTOGRAPHERS' ASSOCIATION OF TEXAS

HELD its annual convention at Dallas, October 3d, 4th and 5th, electing for its officers H. H. Morris, of Galveston, President; James T. Obannon, Secretary; Bert Williams, Treasurer; with M. L. Saunders, Frank Holland, G. Deane and Thomas Holland, First, Second, Third and Fourth Vice-Presidents, respectively. The association is in excellent financial condition, the Treasurer reporting over $400 in the treasury. A committee was appointed to assist the National Copyright League in its efforts toward obtaining a new copyright law. Prizes were awarded in a number of classes, J. C. Deane, of Waco, capturing the first, Association Cup Class; M. L. Landers, of Waco, was awarded the prize in the second, Genre, and Bushong and Feldman taking the first prize in Class A. Waco was selected as the place of meeting for the next convention, date to be decided later.

THE PHOTOGRAPHERS' ASSOCIATION OF KANSAS.

THE first annual convention of the Photographers' Association of Kansas closed on the 27th of September, at Topeka, Kan., and was one of the most successful conventions in the history of the Association. The officers for the ensuing year are: C. J. Snyder, of Topeka, President; G. A. Streator, Vice-President; G. G. Shellabarger, of Sterling, was re-elected Secretary, and P. H. Bauer, Treasurer. The convention next year will be held in Junction City, Kan. Mr. P. H. Bauer, of Leavenworth, took the first prize, a gold medal, in Class A, and also in the Genre Class. The convention was noted by the progressive spirit manifested, and by the interest taken in the lectures, demonstrations., etc., forming part of the programme.

"HONOR TO WHOM HONOR."

THE following very interesting communication is received from Mr. C. W. Canfield, which, in addition to paying tribute to the memory of Mr. Archer, recalls the problem of the latent image and the question of its being, under certain conditions, visible before development.

Many of the older workers in the wet-collodion process will remember that this question has been raised before. Mr. Canfield writes as follows:

"I chanced on a query or remark in an article by Mr. W. Jerome Harrison on page 337 of Anthony's BULLETIN for 1886 on which I can shed some light—reflected. He (Mr. Harrison) says: 'The first edition of Archer's work is very scarce. * * * He bought up as many copies as possible, though with what object it is not easy to conjecture.'

"On page 10 of Volume II of the same journal, 1871, in an article, signed H. D. F., 'To the Memory of Frederic Scott Archer,' the writer, says: 'To give * * * an idea of the honorable man, I relate what follows. * * * In the first edition, Mr. Archer, in describing the process, said: "If your negative is well exposed in the camera all the details will be apparent on the plate before development."'

"Time passed on, and one and another told Mr. Archer that they could see nothing of a picture before developing. He tried to show them their mistake, but nothing appeared before developing. He then went quietly to work and bought up all the copies he could get of his first edition. * * * Mr. Archer published a second edition, leaving out the above apparent mistake."

"Some time after this some pupils, who were learning photography of me, wanted a day out in the country. * * * To my astonishment, the first negative was perfectly distinct, both by reflected and transmitted light. * * * In the hurry of packing, I was short of collodion, so filled my bottle from some waste collodion made by Archer in the beginning. I mention this little incident to show how careful Archer was not to lead anyone into difficulty or trouble."

"'H. D. F.' was H. D. Francis, who contributed frequently to the early numbers of the BULLETIN. He signs his first communication (Volume I, page 48) as 'Founder and proprietor of the School of Photography in London, Photographer to the British Museum, the Royal Asiatic Society, the Royal Society of Literature, etc.'

"It seems that he made a lot of tests of various collodions for Archer while he was experimenting, which accounts for his having the early sample on hand."

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All copy for December issue must be in our hands not later than November 15th.

PROFESSIONAL ERRORS.

By Martin Frommell.

IT is curious to observe that one of the most common errors that has been impressed upon the mind of the public with regard to photographs is the assumption that the quality and beauty of a picture must depend upon the way it is "Finished." This, however, is not the fault of the public, but is altogether due to the fact that some professional photographers, in the absence of a true knowledge of the principles of art and often ignorant of even the most simple laws governing the production of pictures by means of mechanical processes, purposely invent meaningless and misleading terms, such as "Extra Finish," "Best Finish," or some other such nonsense, with which they stamp their production as a means of distinguishing the quality of the picture. Thus is the majority of the public, too unfamiliar with the principles of art to be able to decide for themselves, led to believe that all there is to a fine picture is its "Finish."

But this, as I said before, is entirely erroneous, and I mean to define, briefly, my own understanding of the true meaning of photography as an art profession, so that those who wish may in the future know what to look for in a photograph. Before proceeding, however, with the definition of art photography, it is first necessary to give a rough sketch of the principles of art generally.

The object of art is, as all true artists know, to interpret the beauty of Nature. He who knows merely how to use the brush and mix paints is not yet an artist; he must first learn to be able to discern that that which is beautiful is truly nothing else than an aggregation of various harmonies meeting in one common chorus. Whether it applies to music, poetry or picture, there is but one principle governing the beautiful, and that is harmony. The well-tuned strings of a musician's instrument, for instance, send a thrill of appreciation through the hearer. What is it? Harmony. The well-proportioned lines and angles composing any object, making it look beautiful. What is it? Harmony. And lastly, with regard to the human soul, the infinite creator of life and expression.

All this is essential for the artist to know and understand. Only then will the pencil and chalk become real instruments to him, in consequence of which he will be able to interpret Nature's beauty as it happens to inspire him.

Now this general principle relates to photography in just the same way, the only difference being in the instruments used. While one artist uses his brush or pencil as a means to the end of producing his picture, the other uses his mechanical process, for the word photography means "light-drawing." The latter method is, however, more complicated because, while the artist may use his brush at all times, the photographer, on the other hand, depends on his chemicals, which in their turn, are subject to atmospheric conditions, thus causing more or less embarrassment.

To sum up: The art of photography in a higher sense recognizes not the "Finish," but two synthetical and fundamental principles, namely, posing and lighting. Analytically, posing consists in placing the model or object so as to bring about an agreement of lines and proportions—harmony; and lighting consists of a corresponding arrangement of light and shade so as to bring out the high lights and half-tones, contrasted with deeper shadows—again harmony; in a word harmony in all the parts composing the whole production or reproduction, the ever-ruling principle of all art and beauty.

These are the things to be looked for in a picture, and not the "Finish." The "Extra Finish"ed or "Best Finish"ed picture almost invariably carries with it an effect similar to that of the work of a dressmaker who, not understanding the art of fitting, imitates some fine dress by using similar material and trimmings. Thus the essential principle is lost, while a secondary and unimportant one is brought to the front in its place.

On the other hand, who could imitate, for instance, the natural grace and life-vibrating ease with which the wrist of a beautiful woman displays itself when she supports her head from her elbow; or the way the head of a child disposes itself on the shoulders in an attitude caused by the receptivity of an impression, under one circumstance or another?

The ever-familiar truth that "one is an artist who imitates Nature's finest," applies to both equally, to the brush artist as well as to him who uses the mechanical process, provided both are students of Nature, and able to discern its originality and harmony, which dominate all objects, and are something beyond mere "Finish."

ADVERTISING AND DISPLAYS.

By Edward W. Newcomb.

(*Concluded from October Number.*)

Pretty penny at first, but advertising would be a heavy item in any business, and I believe that the reason one can count all the really wealthy photographers in the country with so little mental exertion is very greatly due to the fact that they don't advertise, or, if they do, to no purpose. Newspaper advertising is just exactly as necessary as a place to do business in. I do not believe that any man who wishes to work at a profit and lay by money should start without enough money to pay advertising bills. Next comes magazine advertising, and any one who has a good place and pretends to do first-class work, could, doubtless, make that pay well by appealing in the same vein as suggested for the newspaper advertisement to those who may visit the city. The paper being better and the printing being more carefully done, I think I would venture a picture in the advertisement, taking care that it was of some well-known person, and in my very best style. All this costs money, I know, but it is the cheapest clerk one ever hired, telling half a million people the story that will bring the dollars flying into our coffers. These two forms of advertising are suitable for photographers in large cities only, probably, and would have to be considerably modified for country use. For all that, the country artist needs advertising just as much as his city brother, and he must do considerable of it unless he has no opposition, no ambition, no use for money and no desire to move up in the world. A man clever with the pen could think up some good, convincing talks on photography, illustrate them, and, after printing the text in, send them to the engraver and have some column-wide zinc etchings made. These would be instantly seen, being different from the other advertisements, and, in the case of a man in a small city, would result in a valuable increase of business. If one was in a county seat he could command the entire surrounding trade by sensible appeals gotten up in unique style and published regularly in the county paper.

As for circularizing, there is much against it. If one uses cheap paper, cheap printing and delivers them by hand or mails them with a 1-cent stamp, the amount they cost might just as well have been thrown straight into the sea. On the contrary, if one uses fine linen paper, gets the printing tastily done by expert printers and mails them properly, the cost is very much greater than need be spent to reach far more people through the columns of the newspaper, and, besides, people often are offended when circulars are sent them in sealed envelopes. Still, under certain conditions, circularizing can be made to help business a great deal. For instance, a man can give an exhibition of his work once every three months and send invitations to the private view. He can cease business for two or three days once in so often and hold receptions to view his work or some other work, such as a fine collection of Braun's autotypes or Hanfstaengel's carbons, constantly calling the people's attention to his studio and getting press notices galore. Whatever form of entertainment he may afford—be it a private view of some of his own work, an exhibition of reproductions of famous pictures, which he may borrow from the city dealer and take orders for, or, perhaps, a stereopticon entertainment in the town hall—let him use exquisite taste and spare no expense in the manner of getting up the invitations, for if his bidding to the entertainment be in poor taste, his guests will certainly think his art the same. A man may often be judged by the stationery he uses, and the expert city printer may make the reputation of a man by sending him work far beyond the capacity of the local printer. And, at this juncture, I might well say that letter-head and envelopes, bills and cards, cannot be too quiet and at the same time rich. The city photographer may rely upon the newspaper, but the man in a small town must not only use the county paper, but send invitations hither and yon for miles around. The object of both is the same—to make the people believe that they need photographs and that they need those of the advertiser. When two or more photographers in the same neighborhood use various advertising schemes the work becomes more interesting, and good-natured rivalry may excite interest and boom business. People certainly take interest when each claims to be the best, and go and form their own opinion. A tailor once came on the same block as the old, well-known one in a town, and, being a good workman as well as a quick-witted chap, soon had considerable of the other's trade. Each held forth great inducements and claimed to be better than the other, one sign to that effect following another, till the old tailor finally used up every other term of self-praise save "The best tailor in the world." The new man looked at the sign, and immediately hung out notice that he was "The best tailor on the street." Such rivalry brought lots of newspaper notices, all free, of course, and did them both no end of good. Competition is never going to harm anyone. Why, I know of a large store in New York that was quite a distance out of the way of other stores dealing in similar goods, and the proprietor urged others in that line to move near him. Failing in this, he actually hired a big store across the street and established the —— Company and cut a few of his prices in that store while he sold a few other things cheaper in his real store. This made competition apparent (he advertised both stores liberally), and this made people more content to trade in one or the other of his stores and not walk away to see if anyone else was any cheaper or better. I only quote this instance as showing that competition need not deter one from advertising, nor need it result in lower prices on the whole. The more competition one has, the greater the need of advertising. If the other men do not advertise or do not do it so well as you do, they will have to move; if they do more or better than you and business becomes slack you know your recourse.

A word about where to advertise. When we begin to do any advertising we are soon besieged with advertising solicitors who would talk us to death, spoil our temper and take all our time if we allowed them to. Choose the best medium there is, and if it costs a good deal more than its rival, just congratulate yourself that it does, for it couldn't obtain those prices unless it had a large circulation and gave the advertiser first-class returns. The magazines that charge $5 an agate line are cheaper than those that only charge $1. Do all your advertising through an advertising agent and take his opinion as final. You pay him nothing more than would be charged you at the publisher's office—he gets a commission from them—and the benefit of all his experience is yours free of cost. One great advantage of advertising through an agency is, that we can thereby stave off the importunities of endless friends in the business, rival paper solicitors, programme men and every sort of solicitor by simply saying, "I don't know anything about your medium; like to accommodate you, but you'll have to see ——— & Co., who have entire charge of my advertising appropriation. If they think your proposition a good one no doubt you can do business with them. Good morning." Most of these advertising agencies furnish clients with cards to hang in the office, simply stating in good, large type, "Our advertising is placed by the —— Agency, to whom all propositions should be submitted. No advertising given out here." When the solicitors for journals in which we do not advertise see that, they sadly turn about and we are not bothered with them. Don't advertise to accommodate some friend; don't take space in programmes or other short-lived things; make up your mind that to pay well, advertising has got to be attended to as carefully as any detail in the office or workrooms and then it will pay.

And now let us consider displays a little. Again, comparing our business with that of the merchant, we often find that we suffer by comparison. The merchant pays good salaries to people with a neat taste and eye for color and harmony, to dress his windows, realizing that upon the attractiveness of his window display depends the patronage of countless thousands of passers-by who are not regular patrons of his store. He does this two or three times a week and often every day. Look into a large establishment after it has closed for the day and behind those drawn shades will be found a number of men tastefully arranging a new display in each window, whilst skurrying here and there like ants at work are seen chiefs of departments directing a corps of porters who are removing the day's exhibit and bringing other goods for the deft fingers of the window-dresser to display to the best advantage. Does the photographer do any such work as this? I think not. He is more often content to leave the old display in its case or window till the sun has played havoc with such of the old prints as the flies have not ruined, and when it does strike him that this state of affairs is too apparent to remain unnoticed any longer, he grumblingly gathers together what he can find and proceeds to make a new display, hoping that, perchance, nothing will happen to spoil it for six months anyway. Mayhap I've overdrawn the actual situation somewhat, though I was citing one actual case in a large city, still the fact remains that the photographer, more often than not, forgets the immense value of a window or show-case display and does not take pains to keep it changed frequently or to place therein his very best work. We must realize that money can be made or lost in a studio having a good opportunity for window or show-case display, just on the strength of that display. To put anything short of one's best work in it, or to allow the same old work to remain forever on display, is sure to spoil trade. If the work is short of one's best, the public, thinking that it must naturally be the best the man is capable of, will look elsewhere, and yet what poor stuff is often seen in the show-case of a good photographer. If the work is good, but is allowed to remain too long, the people will not stop to see the pictures any more, and one might as well have no show-case at all. A show-window or case that is not attractive enough to catch the attention of all but the most hurried passers-by is no good, and it must at once be improved or it will do great harm instead of the good it ought to. It costs something to own a window or even a good-sized show-case, and I would advise the man who cannot put a display in his that will draw crowds all day to let it to a man in some other business who will gladly pay for it and get his money's worth out of it. Pictures are the easiest things on earth with which to draw a crowd. They appeal to everybody, from the lover of art to the day laborer or child, who, though they, perhaps, cannot read, can at least understand pictures, and they want plenty, too. A photographer should, with his artistic sense, his wealth of stock, his immense resources in style of finish, color, etc., be able to make the most handsome display of any place short of the art store, and he most assuredly should take advantage of this splendid opportunity to increase his business, just as the merchant does. If the photographer is not able to maintain a place on the most frequented streets, he should prepare elegant frames of his work and place them in such shop windows as he may be able to obtain the privilege of using. A man may be ever so good a photographer and die of starvation at that if he don't show people what he can do, whether they want to see it or not. The manufacturer hires drummers to go all over the land and show his wares or he never would get up any demand for them, no matter how excellent they were. That drummer has got to show the goods anyway, sell if possible, but show them if he gets forcibly ejected doing it. The manufacturer adopts this way of introducing his goods, because, cost what it will, he realizes that if no one knows of them, no one will buy them, and, as the photographer is something of a manufacturer, he can afford to be guided by some of the rules that mean success to all manufacturers. Displays must be arranged, for that will bring business, increase one's reputation and keep one's name before the public. It would be no error to secure portraits of a great number of prominent people, even if done free of charge, even if one had to pay for the privilege, and use them, a few at a time, among other good work in the window display. At any rate, remember that the public takes all it sees in your show-case as a sample of what is to be had within, and if the prints are not fully up to the standard maintained, if they are not just what you would deliver to the most important person you know, it fails of its purpose. I see so many show-cases, even in large cities, that are not often changed and in which the prints seem almost to be the refuse of the establishment rather than the gems, that I cannot too strongly emphasize the necessity of taking great care of this feature of one's business. Nothing could be better advertising, and one may take it for granted that if he has a show-window he is paying rent for it, and good rent, too. If he does not get it back and more, he at least should give up a gallery with such a useless expense and get a cheaper one. A photographer necessarily spends a good deal of his time in keeping up to the times, studying his art and practicing it, but he must not lose sight of the fact that he is not doing it for glory alone. He expects some pecuniary reward, and if he will use ordinary business methods he has an excellent chance to attain that result. An ideal partnership, I think, might be formed by a true artist and a keen business man, with the understanding that each was to have full sway in his own department. Artists are often poor business men, and good, keen business heads often are not particularly devoted to the artistic, hence the two could divide the hard work and trust each other with confidence. Something has got to be done by many of the photographers in this country or they'll have nothing to show for a lifetime of hard toil. I suggest that they devote some of their time to studying advertising, display, means of obtaining notoriety, some portion of each day, and "get there" like other business folk do. If one really has no taste for such matters I advise the engaging of a good business manager, who regards photographs as a salable commodity, puts his whole energy into selling all you can produce and gets your place going on business principles and keeps it up.

A NEW METHOD OF INTENSIFICATION.

By Fritz Hansen.

THE tendency of the present day is towards simplicity, and, while much energy and ingenuity have been devoted to the simplification of apparatus, etc., the chemical side of photographic art has been, to a certain extent, neglected.

The modern developers, which are from time to time brought out by the Actien-Gesellschaft für Anilin-Fabrikation and others, are of great value, both to the professional and to the amateur, and are a step in the right direction, affording relief from previous complicated working by means of the ease and simplicity with which solutions are made, giving the operator the time and opportunity to take more pains with the artistic side of his profession.

Intensification belongs to one of those processes which have received scant attention during the course of the last few years.

The improvement that can be effected on a weak, thin negative or one without contrasts, which otherwise would have been destroyed, rendering valuable many plates otherwise useless, singles this process out for greater attention, as even the experienced operator does not always succeed in obtaining perfect negatives. The different modes of intensification are naturally of great importance, as with the use of dry plates the process has become more difficult than in the days of the wet process.

Ordinarily there are two methods employed, the most important being, as is well known, the mercury process, the silver image being first bleached out with a solution of bichloride of mercury. Then follows a long and tedious washing, and the bleached image has to be reblackened in various solutions, such as ammonia, silver cyanide, soda sulphite, etc., and then the plate has to be washed again. Besides being a very complicated method, the process has the disadvantages of uncertainty of action and others too well known to need recapitulation.

Another favored formula for intensification is that of the uranium method, which can be done in one operation, but the red-brown color which the image assumes is not particularly stable, and it is impossible to judge the strength of the image, and, although the plate may have been sufficiently intensified, after some time, the color fades, and it is necessary to go all through the process again, besides which the solution has to be made up as required, being of very unstable properties and having to be used immediately.

An ideal intensifier should, therefore, be a liquid, preferably a concentrated solution, needing only diluting with water to be ready for immediate use. This want is supplied in the Agfa-Intensifier, manufactured by the Actien-Gesellschaft für Anilin-Fabrikation, Berlin, Germany.

This solution keeps indefinitely, intensifies with only one manipulation, giving a gray-black color. A second blackening is quite unnecessary, as the image will obtain the right color at once without stains and without blotches or pinholes. It is only necessary to dilute the solution as purchased with 10 parts of water, and into this the negative to be intensified is immersed, the dish being rocked meanwhile. In this bath the plates remain until the desired grade of intensification is arrived at, which is easily judged by transmitted light. In two minutes intensification has commenced, and in a good many cases will prove sufficient. The maximum of intensification takes place within the first ten minutes, after which the image becomes gray-white and becomes more or less reduced.

Sufficient intensification being attained, the plate is to be washed for from five to ten minutes and dried.

Considering that the process is certain and so simple and rapid, Afga-Intensifier can certainly lay claim to be an ideal substitute for all methods of intensification previously employed.

AERIAL PERSPECTIVE.

By G. Albien.

THE study of perspective forms an important chapter for the artist, particularly the painter, for, together with anatomy and art history, perspective is the foundation of his art.

By attentive observation of an object, we will find that its appearance deviates considerably from its actual form ; and this changes continually, according to the changing of our position. This fact is due to the arrangement of our eye. Some lines seem to converge towards a certain point (a railroad, the houses of a street, or trees of an avenue) ; others remain in a parallel line, but appear smaller the further distant they are from us, although they really remain the same.

By the study of perspective the artist is enabled to draw the objects as they appear, and they leave then the impression of being actually so.

Part of this science, of interest to painters as well as photographers, is the aerial perspective. This means that objects seen by us through the air will appear differently from what they actually are. If we look at the house across the street, we observe no change, notwithstanding the air, which is between our eye and the house. Why? We feel the influence of the air only at a considerable distance. It is just the same as with a glass plate. If we put a covering glass on a picture, the latter appears in its original tone ; if we now take 3, 4 or 5 glasses, the picture tone will become bluish green, and gain in intensity with the number of glasses put on. This appearance repeats itself in the air. The greater the distance between our eye and the object we look at, the more the color changes. Upon this is based the difference between perspective and aerial perspective. In the former the bodies seem to change in the form ; in the latter, the color is influenced. The painter, of course, has to take both into account, if he wants to put his objects with natural effect on the canvas.

In what manner the air influences the bodies in the color depends largely upon the condition of the atmosphere. Ordinarily it shows a tendency to color blue, but sometimes it will change to red, violet and gray shades. By taking these colorations into consideration, the artist painter has an excellent medium to increase the effect of distance in his picture; by conscientious observation of this property of the air, he will succeed in giving to his distant objects on the picture the same effect seen in Nature, and it will thus leave the same impression as when looked at in the landscape.

In what position, however, is the landscape photographer with his plate and his apparatus towards the aerial perspective? Because distance and the distant center of the landscape have a bluish effect through the air, they leave a greater impression upon the ordinary dry plate than would otherwise be the case in the natural color. Yes, the distance sometimes gradually passes into the sky, and will then appear white upon the print. If a color-sensitive plate is used, then the opposite sometimes takes place, the distance becoming too heavy and passing into the foreground. I have found that in most cases better pictures are obtained with the ordinary dry plate than with the orthochromatic—at least, they act more naturally and leave a more realistic impression of space if during development the distance and part of the middle ground are held back.

Let us look now at some photographic prints, landscapes, water scenes, etc., with regard to aerial perspective. In most of them we find little or nothing in the space between the nearby and distant objects, which should be recognized by being more or less subdued according to distance, and which should awaken in the looker-on an atmospheric impression—an impression of space. This should certainly be expected from every landscape which pretends to be more than a common print. There is an example of harbor scenery—several ships, sailing behind each other, the nearest as heavy in tone as the second, and as the last and most distant one. By looking at this, we will become totally confused, because, according to the tone, all three vessels seem to sail in one line, while, according to the size (the distant one is much smaller than the others), they appear to be not of equal distance from the eye of the looker-on. The posts on shore, all equally dark, give the same erroneous impression. The same mistakes we find with trees, houses and landscape details; the impression is wanting, that air and therefore space is between the objects and the observer.

It is difficult to correct a picture, printed on celloidin, aristo, and similar papers, but in the gum print this can be done. By correcting the negative, good and satisfactory effects can also be obtained. The parts that should have been weaker are covered with matt varnish or tissue paper upon the glass side. Consideration must be had for the differences—the distance should be more covered than the middle ground, etc. If suitable vignettes are cut, special parts can be covered during printing. The landscape photographer must also have some experience in the application of color plates. If the color filters are too effective, the trees appear as if covered with snow, etc. A good and faithful study of Nature should be the aim of every landscape photographer.

Translated by Henry Dietrich.

SOME USEFUL STAINS FOR PHOTOGRAPHERS.

By John B. Haggart.

Many a time the photographer requires to use stains for various purposes, such as the making or repairing of his camera, or he may want to have his exhibition frames of special colors, to suit his various requirements.

Below I give a series of useful stains, all of which I have used at various times. A mahogany stain may be the most useful of the lot, so I give it first.

Rub the surface of the wood with a solution of nitrous acid, and then apply the following solution with a soft, pliable camel hair brush :

Dragon's blood	4 drams.
Ordinary washing soda	3 “
Alcohol (methylated)	10 ounces.

Filter previous to use.

When this dries, go over the wood again with what is known technically as “ Slake,” taking care to put in on thin and evenly. Any oilman's store will supply it.

Black stains can be made by numerous methods. Below I give three. Perhaps the most simple way is to mix a small quantity of lampblack and French polish, rubbing it into the wood by means of a piece of cotton wool covered with a piece of soft linen rag.

Another one is made by boiling 1 ounce of logwood chips in 10 ounces of water, and adding 60 grains of common pearlash, and applying hot with a brush. Next take a similar solution of logwood, and add 30 grains of verdigris and 30 grains of copper sulphate. Filter, and add, say, nearly an ounce of rusty steel filings, and go over the woodwork again.

If you desire to put a polish on this you will require to make up the following solution, and apply with a piece of cotton wool covered with an old linen rag, as in the first case :

Bleached shellac (white)	1 ounce.
Methylated spirits	7 ounces.

Nothing will touch a solution of dilute sulphuric acid 1 ounce, water 10 ounces, for creating a black stain on small articles.

Simply brush on the article, and allow it to sink in ; then hold it near a fire for a few minutes, and it will gradually become a deep ebony black. Be careful, however, not to let the solution touch your fingers or clothes, and rinse the brush well in cold water, to free it from the acid.

Yellow stains are useful for picture frames. The following gives very good results : Boil 1 ounce of French berries in 10 ounces of water until the water assumes a rich yellow color. Should the color not be bright enough, add the following :

Grain tin	30 grains.
Dilute nitric acid	1 ounce.

Another yellow stain may be obtained by making an alcoholic solution of aurantia of the requisite depth of color, and applying with a soft, pliable brush. If the mahogany stain is applied very dilute, and followed by the aurantia solution, a good brown will be got.

Photograph by THUSS.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

Green stains of numerous shades are very valuable and handy. Beneath I append two methods by which a quantity of shades can be made. Make the following two solutions:

A.—Verdigris	1 ounce.
Vinegar or dilute acetic acid	10 ounces.
B.—Indigo	2 drams.
Vinegar or dilute acetic acid	15 ounces.

It is preferable to heat both the solutions when compounding them. By mixing the two solutions in different quantities the different shades are obtained, and it is perhaps as well to remember that the amount of the B solution added darkens the shade accordingly. The writer has always found 5 ounces of A added to 1 ounce of B to be a very useful combination.

Another method which also yields numerous tones and shades is from an American source. To the infusion of French berries, as used in the yellow stain (a 10 per cent. solution), add as much indigo sulphate as necessary, until the desired shade of color is obtained.

An exquisite blue stain is obtained as follows: In a clean earthenware jar place 4 ounces of sulphuric acid, and to that add 1 ounce of the best indigo (which should be well ground). Place the jar into a basin, as the contents will effervesce and, if the earthenware jar is too small, boil over. When the effervescence has ceased, add such a quantity of the solution to distilled water as will give you the desired shade of blue. This should be applied to the woodwork, using an artist's stiff brush. Keeping improves the color greatly.

A capital imitation of walnut can be got by using the following solution:

Bichromate of potash	40 grains.
Vandyke brown	400 "
Carbonate of soda	200 "
Water up to	10 ounces.

This is best boiled, and can be applied hot or cold by means of a soft brush.

Oak can be imitated very well by means of a solution of permanganate of potash. The quantity will depend on the shade. I find 80 grains to 10 ounces of water very suitable.

Occasionally a reddish stain may be wanted. This makes a good red, which may be a little bright; but age will remedy that: Boil 1 ounce of logwood chips in a pint of water (20 ounces). To that add the following: Grain tin, 30 grains; dilute nitric acid, 1 ounce. When you are buying the logwood, see that it is fresh; this is easily known by its bright red color—as it becomes old, it becomes a dirty brown. The stain should be filtered and made hot before application.

Brown stain is arrived at by applying a coat of this solution:

Catechu or cutch	½ ounce.
Carbonate of soda	120 grains.
Water	15 ounces.

Boil, and then apply hot. When this is thoroughly dry, apply a solution of bichromate of potassium. The strength of the bichromate solution will regulate the depth of the color.

All the stains enumerated above are absolutely permanent, and place the power of control, as far as the colors of exhibition frames are concerned, in the hands of the exhibitor, if he gets his frames made or makes them in common white wood.—*The Amateur Photographer.*

DIRECT REPRODUCTION OF DRAWINGS, MAPS, ENGRAVINGS, ETC.

By F. Alberini.

DURING his experiments covering the application of asphaltum to photo-zincography F. Alberini discovered its remarkable property of becoming, so to say, soluble in alcohol, and even in water, after long exposure. This fact enabled him to work out a lichtpaus process, by which from a positive original by direct printing a positive zinc cliché can be produced, which admits the multiplication of the original in fatty black ink in any numbers. The process is executed as follows:

The zinc plate, polished and cleaned in the ordinary way, is prepared with a solution of

Asphaltum	70 grams.
Benzine (0.70)	1,000 cubic centimeters.

and is then dried. After drying, the prepared surface should show a pale gold color. The printing lasts a longer time than ordinarily, in order that the asphaltum may obtain the above-mentioned property; for transparent originals the time is from two to three hours; for originals upon strong paper, from five to six hours in the sun.

According to Alberini's experience the printing frame should not stand vertically towards the sun's rays, but be in a slanting position, as otherwise the asphaltum will not dissolve in the middle of the plate during development.

This peculiar appearance, Alberini thinks, is due to a greater heat in the middle of the plate than at the edges, where the rays fall vertically upon the picture. This has also been observed in the ordinary asphaltum process, but, whatever may be the cause, it takes place only when the printing frame is in a vertical position.

After exposure the plate is put (in diffused daylight) in a tray containing 40-degree alcohol, and after a few minutes it is taken out and placed upon a support near a window. At correct exposure a difference between drawing and plate is distinctly visible. The exposed parts will be brighter than the drawing.

The removal of the asphaltum, changed by exposure, is done mechanically. With alcohol and a cotton tuft, which is changed frequently, the picture surface is rubbed until the drawing appears distinctly upon the exposed zinc surface. The removed asphaltum forms a fine yellow powder, which is soaked up by the cotton tuft. After development the plate is washed under the faucet until all oily streaks have been removed, and it is then put into the etching tray, containing a solution of

Nitric acid	2 cubic centimeters.
Water	100 cubic centimeters.

After about one minute the plate is taken out, the nitrate of zinc, which has formed, is removed with a sponge, and the operation is repeated two to three times.

If some parts should not have been sufficiently developed, they are dried with blotting paper and can be redeveloped and etched. During etching the zinc plate has to remain immersed in the liquid.

The further treatment of the plate for zinc flat printing is analogous to zincography. For further preparations Alberini uses a solution of

Nutgall solution	100	cubic	centimeters,
Nitric acid	4	"	"
Muriatic acid	2	"	"

which is put on the plate with a flat bristle brush. The plate is then washed, rubbed with 25 per cent. rubber solution and dried.

The nutgall solution is made by boiling 125 grams powdered nutgalls in 5 liters of water. This is left boiling until the liquid has been reduced to about two-thirds of its original volume. Before printing the rubber coating is removed with water, the asphaltum forming the drawing, with turpentine or benzine.

Translated by
HENRY DIETRICH.

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GLEANINGS FROM GERMANY.

By HENRY DIETRICH.

THORIUM RAYS.—To the bodies emitting invisible but photographically active rays belongs thorium, and Mr. G. C. Schmidt, who has made a study of this class of rays, has arrived at the following results : Thorium, by itself and in connection with other bodies, emits rays resembling those of uranium, and producing developable pictures. They impart to the air a certain conducting power for electricity and carry the discharge of electrified bodies. The rays penetrate paper, gelatine, thin glass and thin sheets of metal, like zinc, tin, brass, copper and silver. Aluminium is easily penetrable, while lead has proven to be almost impenetrable. The rays differ from the Röntgen rays by being refractive, but cannot be polarized by tourmaline, like the uranium rays. In case the actions, caused by fluor spar, resin turpentine, zinc and other bodies, are based upon the emission of peculiar rays, these rays are not identical with uranium and thorium rays, because they do not impart to the atmosphere the conductive capacity for electricity.

Electric Light and Color.—The *Electrische Ingenieur* calls attention to the relations between light absorption and reflection with electric light, and notes that the points coming into consideration here, are also of the greatest importance for photography. It makes an essential difference whether the lighted surface reflects 50 or only 10 per cent. of light. As for our purpose the reflection capacity of the several colors is of greatest importance, the following figures claim our consideration : Black velvet reflects 0.4 per cent. ; black cloth, 1.2 per cent. ; chocolate brown, 4 per cent. ; black paper, 4.5 per cent. ; dark blue, 6.5 per cent. ; dark green, 10.1 per cent. ; dark brown, 13 per cent. ; red, 16.2; light yellow, 20; brown, 23.2; white sandstone, 24; blue paper, 25; yellow card board, 30; straw yellow, 34.4; yellow paper, 40; green paper, 46.5; light yellow paper, 50; gray paper, 50; light colored wood, 50; light orange paper, 54.8; white paper, 70; freshly fallen snow, 78; white filter paper, 82; mirrors, 83; and white cardboard, 92.3 per cent.

Light Power of Different Light Sources.—A number of experiments into the relative brightness of different light sources for projection purposes, made by the Société Française, have given the following results:

Petroleum lamp, several wicks	1
Gas burner No. 2, without reflectors	1
Acetylene gas, 1 burner, without reflectors	1.06
" 2 " "	1.70
" 3 " "	3.20
" 4 " "	4.10
" 5 " "	4.50
Lime light, alcohol-oxygen	5.80
" hydrogen-oxygen	16.60
" ether-oxygen	18.50
Electric incandescent light, 32 candle-power	0.68
" " " 50 " vertical	0.93
" " " " " horizonal	0.93
Electric arc light, 7 amperes	39.03
" " 10 "	75.61
" " 12 "	86.50
" " 15 "	117.61
" " 20 "	160.80

Varnish for Collodion Lantern Slides.—A good varnish for diapositives for projection purposes, made with the collodion process (wet or dry), is an important requirement. It must be hard, without structure, and should not soften by heat or injure the film when poured on. Such a varnish can be obtained after the following formula:

Saturated solution of amber in chloroform	6 parts.
Pure benzol	6 "
Gum damar	1 part.

Gelatine in the Emulsion Process.—The influence of gelatine in the bromide of silver emulsion process is pretty well known in its actions, but the causes have not been studied very deeply. The following communications by Blanc may, therefore, be of interest. If ammonia and alum are simultaneously present in an emulsion, the latter is destroyed by the action of both bodies upon each other. A small quantity of alum is favorable for the emulsion; it increases the contrasts, but at the same time retards the development and reduces the general sensitiveness. Borax and carbonate of soda act in a reversed way; they attack, however, the paper fiber in the bromide of silver paper. If the gelatine used for emulsionizing is washed several times before use, and then cooked, a more sensitive emulsion is obtained than without this process, and the ripening also proceeds much quicker. The behavior of washed and unwashed gelatine to nitrate of silver is peculiar. While the latter colors yellow even in the dark, the former remains unchanged, even if the nitrate of silver quantity was small. Gelatine emulsion, which shows green fog, is insoluble after developing. By treatment of a highly sensitive emulsion with a bichromate of potassium solution, the sensitiveness is reduced to a certain limit, and cannot be increased again by further cooking. Bromide of ammonia is more suitable for the ripening process than bromide of potassium. Chloro-bromide of silver emulsion for positive prints should contain half as much chloride as bromide to produce strong pictures.

Intensification of Diapositives for Projection.

Citric acid	3	grams.
Pyrogallic acid	1.25	"
Nitrate of silver solution, 2.5 per cent	2.5	cubic centimeters.
Water	100	" "

The diapositive is well dried and immersed in the above bath. The intensification proceeds slowly and regularly. When the desired strength has been obtained, the plate is well washed and fixed in a weak solution of hyposulphite of soda.

Water-tight Protection for Negatives.—Moisture is the principal cause of the destruction of many valuable negatives. Without moisture, insufficient washing would damage a plate very little, because the bleaching of badly washed silver pictures can only take place, if the salts, which are present in the film, contain water, no matter how little. The yellow coloration of many negatives is also only dependent upon the access of air. What we require therefore, is above all a complete protection of the film against air and water. The usual varnishing of negatives is not sufficient for this purpose. One can easily be convinced of this, if a well-varnished negative is left in the water for several hours. Very fine fissures will soon show, that the gelatine has been reached by the water, and in swelling has rent the varnish of the negative. The varnish commonly applied is also not a sufficient protection for gases, and the addition of Venice turpentine is generally used to remedy this. To protect a plate against all these influences, a 30 per cent. solution of paraffine in benzine should be applied with a brush. The plate is then dried and now, after heating the same, rubbed off hot with a piece of linen. The gelatine becomes smooth, and during heating takes up more paraffine, and can finally be varnished. The plate is completely water-proof without varnish and leaves the water dry, although it may have been in the same for hours; but no retouching will adhere to the film. This is done on the varnish coating.

Gold Chromate.—Gold salt can also be combined with chromate. The combination is an alkaline auro-chromate with a small excess of chromate. The solution of this product is almost neutral. The toning baths prepared with it keep for a long time and give light purple, to bluish colored tones. The solution has the well-known color of the chrome salts. The moment can, therefore, not be observed, when the quantity of gold salt, under the influence of water and light, are reduced to a minimum, as, for instance, with the chloride of gold. Still this would offer no difficulties, because it is pretty certain, that a reduction will not take place before 24 to 48 hours. The yellow, very non-actinic color of the bath offers the advantage, that the toning can be done in a bright light, without fear of any fog. The yellow coloration, which the paper gets in the solutions, disappears completely during washing, but the pictures must first be fixed.

Hyposulphite of Ammonium and Hyposulphite of Soda.—The use of hyposulphite of ammonium or thiosulphite of ammonium, in place of hyposulphite of soda, for the fixing of negatives, has frequently been proposed. Dr. Diners and also M. Ogawa of Japan have made comparative tests with both salts and have found that the thiosulphite of ammonium dissolves more easily and quickly from plates and paper than the ordinary fixing soda. The fibers of photographic papers in particular will hold the hyposulphite of soda so long that insufficient washing causes yellow spots.

Iodide of Mercury as Intensifier.—Lumière and Seyewetz recommend this well-known intensifier after the following formula: Dissolve 4 grams bichloride of mercury in 200 cubic centimeters of water by adding a solution of 10 grams iodide of potassium in 65 cubic centimeters of water, and a solution of 8 grams fixing soda in 65 cubic centimeters of water. For use, take 100 cubic centimeters of water, 10 grams sulphite of soda, free from water, and 1 gram iodide of mercury.

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EFFECTUAL WASHING.*

IN two previous articles we have dealt with the subject of the fixation of silver prints, as relating to their stability. When dealing with the subject we pointed out that unless the prints were perfectly fixed in the first instance, so that the complex hypo-silver salts were got into a perfectly soluble condition, no after washing would eliminate them, however long it might be. Now, it is these salts, if left in the picture, that do the chief mischief ; a mere trace of hyposulphite of soda is comparatively harmless, as experiments made many years ago have shown. At one time, now many years ago, long washing was thought to be necessary to eliminate the hypo, and it was customary, with many, to leave the prints in running water all night, so that they received fourteen or fifteen hours' washing. In some cases they were left in from the Saturday night till the Monday morning. This prolonged washing was, of course, quite unnecessary. But as the prints then made were of a very robust character, they suffered no harm, and, therefore, conscientious photographers preferred to err on the side of overdoing it rather than underdoing. Present-day pictures would be materially deteriorated in appearance by anything like that treatment, and it would be of no real advantage if they would not be injured.

Some time ago Messrs. Haddon and Grundy demonstrated that the hypo-salts could be entirely got rid of by washing for an hour or so, if the work were properly done. Since then a reaction has set in, and the other extreme has been gone to, and, in many cases, the washing, as a result, is incomplete ; not, however, that the time has been too short, but because the method followed has been not what was required. The directions issued by the makers of some papers encourage too little washing to insure stability—that is, in the conditions it is usually done. Some of these directions say wash for half an hour in running water, others an hour or an hour and a half. Now, many inexperienced amateurs simply rely upon these instructions, and put the dish, or maybe a washing machine, containing perhaps two or three dozen prints, under the tap, and let it dribble for the stated time, and then assume that the pictures will be permanent!

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* Editorial article in *British Journal of Photography* of October 5, 1900.

At the present time there are three different kinds of paper in vogue—albumen, collodion, and gelatine. Now, the films bearing the images, in each case, are of a different character. The albumen one is thin, and the albumen is insoluble and has very little affinity for water. The collodion film is still thinner, and has no affinity whatever for water. Gelatine, on the other hand, has a great affinity for water, and holds it tenaciously, and this film on the paper is also thicker than it is on either of the other papers. Let us for the moment take the two latter—collodion and gelatine—as applied to glass, by way of illustration. Collodion negatives are mostly fixed with cyanide of potassium, and, with that, a minute or two under the tap is ample to render the negative permanent. Many, however, are fixed with hyposulphite of soda, but, even with that, four or five minutes, or less, is quite sufficient to get rid of all traces of the salts. Not so with gelatine negatives, as with them, as everyone knows, a much longer time is necessary to insure the elimination of the hypo-salts, even when the negative has been thoroughly fixed. Here we are dealing with the film on an impervious and non-absorbent material—glass.

In the case of prints, there is not only the film, but the paper, an absorbent material both of water and the solution of the hypo-silver salts, to be taken into consideration. These have not only to be eliminated from the films on the paper, but from the baryta coating, with which most of the "P. O. P.'s" are surfaced, as well as from the sizing material by which it is held to the paper. Now, can it be expected that the brief time, sometimes recommended, will effect this, in the conditions the washing is too often done?

In washing a precipitate, a chemist is very careful to drain off, as dry as possible, all the water he can before adding fresh, for the washing is simply a matter of dilution. For example, say to begin with, there are 40 ounces of solution to be eliminated, and the precipitate is drained off to 1 ounce. When the vessel is filled up again the water contains but a fortieth part of what it did before, and when the precipitate is again drained off to an ounce, and the vessel is once more filled up, the water contains but a fortieth part of what the previous lot did, and so on with each subsequent change, until the precipitate is thoroughly washed. In the days when albumen paper was the only one used, prints, as now, sometimes had to be produced in a great hurry, and old photographers have told us that some of the most permanent ones they have made were washed in from ten minutes to a quarter of an hour. The washing was done in this way: After the prints were thoroughly fixed they were blotted off as closely as possible; they were then put into water and kept in motion for a minute or two, until it had thoroughly permeated the paper. The prints were then closely blotted off as before. Then they were put into water again, or washed under the tap for a few minutes, and once more blotted off, these operations being repeated till it was judged that all hypo had been removed. Here it will be seen that the principle of washing a precipitate was closely followed.

Of course the blotting-off method, even in a case of emergency, could not be adopted with gelatine papers, though it could with collodion ones. Much the same end may, however, be attained with gelatine papers by taking the prints from the water, placing them on a glass plate, and then passing over the back a soft roller squeegee with heavy pressure We have merely quoted the above to illustrate how prints can be effectively washed in a very short time—and the same principle can be followed in every-day work in this way.

After the prints are fixed let the hypo solution be poured off, and the prints thoroughly drained while adhering to the bottom of the dish. They may then be put into a larger dish, or tray, and that filled up with water, and kept in motion for a few minutes, and the water closely drained off as before, these operations being repeated every five or six minutes. In this way, with a dozen or so changes of water, according to the number of prints and the size of the vessel, the pictures may be considered effectually washed in an hour or so. If the tap be running while the prints are in the water, so much the better. The object in the effectual washing of prints should be to get rid of as much as possible of the previous water before putting them into the next. Continual changes of water, with close draining between each, is far better than any continuous washing contrivances, however convenient they may be.

ON THE PRODUCTION OF SILVER PRINTS WITHOUT TONING.

(*Concluded from September Number.*)

IN an article entitled "Ammonia as a Fixing Agent," which appeared in this *Journal* on November 3, 1893, I described at length the course of treatment which I had found necessary to follow in using this reagent for the purpose of fixing prints produced by the ordinary chloride process. I showed that, in order to obtain good results with the ammonia bath, the prints must be toned in the usual gold bath before fixing. The process, therefore, it was seen, could not be carried out so as to effect any appreciable reduction, either in the cost of the materials employed or in the amount of time and labor demanded of the printer. In spite of these admitted disadvantages, however, it was felt that the introduction of the ammonia bath could be justified on practical grounds, seeing that, as a first step towards the production of permanent prints, it seems requisite that the use of sulphur compounds for fixing purposes should be abandoned. By employing tartrate of silver as a sensitizer instead of the chloride, I find it is possible, using the ammonia fixing bath, to produce excellent prints without any toning whatever. The image is of a somewhat warmer color than that which is produced when the hyposulphite bath is used.

For the benefit of those who may desire to test for themselves the merits of the tartrate printing process, I give below the formulas for the preparation of the sensitizing and fixing solutions:

SILVER NITRATE SOLUTION.

A.—Crystallized silver nitrate...	280 grains, or 18 grams.
Distilled water.............	7 fluid ounces, or 199 cubic centimeters.

AMMONIUM TARTRATE SOLUTION.

B.—Ammonium tartrate........	250 grains, or 16 grams.
Distilled water.............	10 fluid ounces, or 284 cubic centimeters.

HYPOSULPHITE FIXING BATH.

Hyposulphite of soda.......	2 ounces, or 57 grams.
Water......................	14 fluid ounces, or 397 cubic centimeters.

AMMONIA FIXING BATH.

Ammonia (sp. gr. = .880)...	2 fluid ounces, or 57 cubic centimeters.
Water......................	14 " " or 397 " "

With regard to the reagents employed in sensitizing, I should here mention that ammonium tartrate is a salt which the photographer may experience some difficulty in procuring. Luckily for him, it can be very easily prepared at home, and this is the course I should recommend to those who may be unable to obtain it at the chemical dealers'. The only reagents required for the purpose are tartaric acid and ammonia. A saturated aqueous solution of the former having been made, ammonia is added thereto, drop by drop, until the acid reaction has entirely disappeared, this point being determined by testing with litmus paper. The liquid is then to be evaporated to a small bulk, and, when sufficiently concentrated, set aside to cool. When the whole has become solid, the crystals must be removed and spread on a sheet of blotting-paper to dry, after which they may be transferred to a bottle for preservation. The paper used for printing should be of tough quality, and should possess a smooth, close-grained surface perfectly free from size. In the case of the nitrate bath the operation of sensitizing may be performed by floating the paper in the usual manner. After draining, the sheet should be laid aside in a dark place until superficially dry. While still damp, the tartrate solution should be applied by means of a soft sable brush, care being taken to coat the paper as evenly as possible. In order to guard against any excess of nitrate being left after sensitizing, a second coating of the tartrate solution should be applied once the first has had time to soak into the paper. The sensitized paper will keep for about a fortnight if preserved from air and light in a dry place; but it should be used as soon as possible, otherwise the purity of the high lights may become impaired.

In the operation of printing an ample exposure should be given, as the loss of density on fixing is rather greater than in the case of a chloride print. If it is thought necessary, the prints may be well soaked in water before immersion in the fixing bath. In my own practice, however, they have invariably been fixed without this preliminary washing, and no bad results have ensued. In fixing with the hyposulphite bath half an hour's immersion will be required; with the ammonia bath an immersion of fifteen minutes should be sufficient, as its action is more energetic. On their removal from the fixing bath the prints should be washed in the usual way.

In the hands of careful workers the process just described is capable of affording results little, if at all, inferior to those obtained upon plain paper under the old system of printing and toning. Still better results might, perhaps, be obtained by the use of a stronger nitrate bath. As it is, the prints exhibit a range of tone, and warmth, and richness of color which is remarkable, bearing in mind the circumstances attending their production and the simplicity of the means employed.

I recently made a few additional experiments with the tartrate, my object being to ascertain whether or not the valuable properties of the salt might be utilized for the purpose of preparing a gelatine emulsion. I made use of a formula very similar to that of the excellent one recommended by Mr. J. Barker, but containing a little additional tartrate in place of the chloride of silver.

Unfortunately, through a want of proper attention at the stage when the silver nitrate solution was added, the resulting emulsion was not quite homogeneous, and, owing to the loss of silver tartrate due to this cause, the prints obtained were weak and somewhat mottled in appearance. These prints, without further treatment, were duly fixed in the hyposulphite bath. When removed from the solution, they were found to have lost considerably in vigor. On the other hand, the color was fairly good, and, though lacking the richness and warmth of a print upon plain paper, possessed nothing of the unpleasant quality characteristic of an untoned and fixed gelatino-chloride print. On the whole, the result seemed to favor the conclusion that a process might be devised which would permit of the use of gelatine in the form of an emulsion. It has already been mentioned that, for sizing the paper, starch, arrowroot, and, in fact, most colloid bodies, are not available. I have not tried gelatine, but, from what has just been said, the probabilities are that it might be employed for this purpose were due care taken to prevent its coming in contact with the nitrate of silver used in the sensitizing operations.

This, of course, is a point which could be very easily settled by experiment.

In conclusion, I would recommend the readers of the *Journal* to study this subject for themselves, and to endeavor by every practicable means to gain a fuller knowledge of the conditions governing the operations of printing, toning, and fixing.

In this way it will be possible to arrive at results which will be of real value, and at a solution which will be accepted as final.

PHOTOGRAPHING LIGHTING.

SOME interesting experiments lately conducted by Mr. George Rumker, of the Hamburg Observatory, in photographing lightning flashes, give weight to the theories recently advanced that their ribbon-like markings are produced by currents of air. Mr. Rumker's experiments included a brilliant flash that struck a tower 550 yards away from his camera, and which, by careful calculation, was estimated to be one-fifth of an inch in width. On each side of this main flash are to be seen many ramifications, which Mr. Rumker attributes to the gale which was blowing at the time of exposure.

THE PRODUCTION OF AN ARTIFICIAL LIGHT OF THE SAME CHARACTER AS DAYLIGHT.*

IT is a matter of common experience that many colors alter in appearance when seen by artificial light. The extent to which colors may vary under different illumination is, perhaps, not commonly known, but is well illustrated by the range of dyed cloths exhibited. Among other patterns, one which is green by daylight becomes red-brown by gaslight; a violet changes to purple; a gray to heliotrope; a shade of tan to a brick-red. Particularly striking is a pattern woven from specially dyed yarns, which appears a uniform green color by daylight, but which is figured by gaslight. Seen by the light of the electric arc, the patterns show similar, but less marked, changes.

It may be of interest to indicate briefly how such peculiar changes of color arise. The color of a body depends, in the first place, on the nature of the incident light. In monochromatic red light, a red appears much the same as in daylight, but a yellow changes to red, a green is almost black, while blues and violets become red.

Gaslight shows a continuous spectrum from red to violet, but, compared to daylight, is of a strong orange color, due to an excess of rays in the red, orange and yellow. It does not, however, necessarily result that all colors appear redder by gaslight. It is, indeed, well known that the majority of colors change little by gaslight. This is due to the adaptability of the eye. If the light becomes redder, the eye becomes less sensitive to red; if the light is deficient in green, the eyes become more sensitive to green. Persons working by gaslight soon cease to notice its intense orange color. It results that a gray produced by mixture of black and white appears gray under any illumination, and simple colors, such as reds, oranges and some greens, giving light confined practically to one part of the spectrum, undergo little change.

Generally, however, the color of the body is due to a mixture of light from different parts of the spectrum. All violet colors are transparent, not only for violet, but also for blue and red light; all blues transmit, not only blue, violet and green light, but also more or less red. Consequently, whenever a blue or violet is used in the production of what is called by artists a "tertiary" color, the general result is a color having bright bands in different parts of the spectrum. A mixture of red, blue and yellow to produce a neutral gray will show bright bands in the red and green—complementary colors, resulting in a proportion of white light. According to the exact position and intensity of these bands, the gray will become redder or greener, or may even remain unchanged by gaslight.

Generally, colors become redder under artificial light. This is due, not merely to the redder character of artificial lights as compared with daylight, but to the peculiar transparency of coloring matters for red light. Among reds and yellows we have many theoretically perfect

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* Abstract of a paper read before Section A of the British Association at Bradford, 1900, by Arthur Dufton, M.A., B.Sc., and Walter M. Gardner, Bradford Technical College. Reprinted from the *Photographic News*.

PHOTOGRAPH BY THUSS.

coloring matters—a perfect yellow being one having sharp absorption in the violet and blue, and perfect transparency for green, yellow, orange and red rays. A perfect blue would be transparent for violet, blue and green, and opaque for the rest of the spectrum. Apparently such a blue can only be obtained by means of cupric salts. All other blue dyes and pigments we have examined agree in being more or less transparent for red light. Even greens transmit some red. This peculiar transparency of colors for red light is of primary importance in color-matching. All dyers know how persistent is the tendency to the development of red in the production of compound shades.

The need of an artificial light which should so closely resemble daylight as to show colors in their true relationship has long been felt by workers in color. At present the electric arc light is largely used for color work, but, as we have seen, it is far from satisfactory.

The peculiar character of daylight is due essentially to the modification produced by the atmosphere in the light from the sun. Light from a north sky as usually adopted for color work is deficient in red, orange and yellow rays, and consequently the light from a clear north sky is intensely blue.

Starting with the electric arc light as being nearest daylight in character, the authors attempted to imitate by direct absorption the effect produced by scattering in the atmosphere.

The light of an arc lamp consists of two distinct parts: (1) The light from the glowing carbons; (2) the light of the arc itself, characterized by its richness in violet rays. In lamps of the enclosed arc type the length of arc is increased, and consequently such lamps give a light richer in violet rays. Although arc lights vary somewhat in the proportion of violet light, they all agree in being richer than daylight in the amount of red, orange and yellow rays, compared with the amount of green and blue. Owing to the peculiar transparency of colors to red light already noticed, it is of primary importance that the proportion of red light should be carefully adjusted. Small variations in the amount of violet light are of minor importance, owing to the eye being less sensitive to such rays, and also because in mixing colors there is not the same tendency to develop a band of violet as we have seen occurs in the red, since yellow colors generally have complete absorption in the violet.

The required absorption of the less refrangible rays can be effected by means of blue cupric salts. A solution of copper sulphate shows strong absorption at the extreme red of the spectrum, the absorption extending with diminishing intensity into the green.

For practical purposes the light from the arc is modified by passage through the pale blue glass colored by means of copper. This colored glass may conveniently take the form of a globe replacing the ordinary globe of the arc light.

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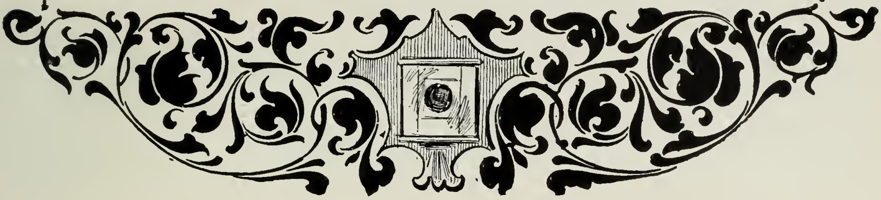
SOCIETIES



WITH the coming of cooler weather, a marked increase in interest and activity is noticeable among the camera clubs of the country, and from indications that are thus far obtainable the outlook for a busy winter is good. The Philadelphia Photographic Salon is one of the first exhibitions to score for the season, press view having been given in the galleries of the Pennsylvania Academy of Fine Arts on Saturday evening, October 20th. The BULLETIN very much regrets that it was unable to be represented, but expects to have a good description of the exhibit in a later number.

* * *

THE San Francisco Camera Club announces a photographic exhibition in connection with the Mark Hopkins Institute of Art, the same to be held in San Francisco, opening Thursday, January 17, 1901, and continuing two weeks. The purpose of this salon is to bring together the best examples of the photographic work of the day, possessing the highest degree of artistic merit and pictorial interest. Prizes will be awarded in seven classes as follows: Landscapes, marine, genre, portraiture, still life, animal studies, architecture and interiors. Additional prizes are offered by *Camera Craft*. Full information may be obtained by addressing the Executive Committee, the San Francisco Photographic Salon, No. 819 Market street, San Francisco.

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The tenth annual exhibition of the Toronto Camera Club takes place December 11th–15th. Full particulars are obtainable by applying to John J. Woolnough, Secretary, No. 32 Coltingham street, Toronto.

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THE Galt Camera Club, Galt, Ontario, have just finished a very satisfactory fall exhibit, which was held in connection with the annual fair. The Club is in excellent condition, and the exhibit reflected great credit upon all.

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THE Lansing Camera Club, of Lansing, Mich., announces to all amateur photographers that their club rooms, at No. 113 Michigan avenue, East, are at their disposal when they may be visiting their city. The officers of the Club for the present year are: President, O. T. Allen; Vice-President, Miss M. McKibbin; Secretary, Miss M. Wagner; Treasurer, F. J. Hopkins.

* * *

THE officers of the Rockland Camera Club, of Rockland, N. Y., are: President, Eugene Perry; Vice-President, James Blauvelt; Secretary and Treasurer, Herbert Marshall. An exhibition is planned for the fall upon a larger scale than anything yet attempted by the Club.

OUR
Reviewer
School of Practical Process Engraving

THE American Annual of Photography and Photographic Times Annual for 1901, edited by Julian C. Abel, and published by the Scovill & Adams Company, is the first of the American year-books to appear, and consists of about thirty contributed articles, many of which are good and contain useful information The yearly calendar is retained as a feature of this volume, and the table of formulas has been revised and enlarged. The most noticeable feature of the book is to be found in its illustrations, which are numerous, but which are very largely reproductions from the work of those who are identified with the recent movement in photography that is responsible for the so-called "Fuzzitype." The Bulletin cannot recognize in these reproductions any qualities of merit from a photographic standpoint, and cannot honestly commend them as examples of photography unless it may be to hold them up as a warning. There are, however, some illustrations that do not come under this classification and are a relief to the eye.

We are in receipt of an elaborate catalogue of photographic supplies, published by H. A. Hyatt, of St. Louis, numbered 15 in his series, which, for comprehensiveness and good qualities in general, outclasses any of its predecessors. It fills 288 pages, 8 x 10½, and contains everything that can be required in a photographic studio. It is well arranged, well printed and bound in an attractive cover.

The Badgley-Graham Company's catalogue is also at hand. It is printed in much the same style as the one just described, and contains a well assorted and displayed line of goods. It is a credit to its publishers and one that should sell goods.

Odd Bits of Travel with Brush and Camera, by Charles M. Taylor, Jr., is a bright and entertaining volume of 360 pages, made up of chatty descriptions of the author's travels over a large part of the globe, and is illustrated profusely from photographs obtained by himself. Mr. Taylor shows in this book how important a part the camera plays in bringing to the knowledge of the reader the scenes and customs of distant lands, which, until its advent, had been impossible. The reader of travel and the lover of pictorial history of foreign countries will appreciate this book.

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EDITORS:

PROF. CHARLES F. CHANDLER, PH.D., LL.D

W. I. SCANDLIN.

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THE MAN BEHIND THE BUSINESS.

IT is likely that at no time in the history of photography has the "personal element" been recognized and rated at as high a value as at the present. The capacity of the individual counts more surely for success or lack of it than ever before, and the caliber of the man who runs the business of the gallery is to-day the determining factor in the battle for a competency in the business world. The weapons with which this battle is waged have been brought to a state of perfection never before reached, and a perfect, up-to-date equipment is obtainable by any one who has the means to start a business of his own. The progress of the past decades has brought important advances in facility of operation, plates are much quicker than they used to be, lenses more perfect, and the entire machinery of the operating room vastly ahead of the conditions governing them at any previous time, and with this growth and development there has followed a steady development in the taste of the masses of the people, by the cultivation of which our profession has been largely benefited and in the development of which photography has been a most important factor. These two features in the history of any science or profession will always be found traveling together, and as proficiency is acquired in the production of any class of artistic or scientific work an increased interest in it will be manifested in the community and a higher appreciation of its merits will result in a largely increasing demand for its products. As this demand grows in volume, however, the discriminating power of the consumer keeps pace with, and frequently outdistances it, and the consequence is, that as mechanical difficulties are overcome and technical imperfections removed, the field for advance in other qualities becomes a most important consideration. In this connection it must be remembered that all improvements in the working qualities of instruments would give equal advantage to all workers using them, if each worker was equally endowed with natural ability, and

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power to translate the subject before him into a picture that may satisfy the demands of his patrons.

It is just at this point that the individuality of the man behind the business begins to become apparent, and if his personality is of the right kind, it will stamp itself on every print that leaves his establishment, and will soon come to have the same effect in enhancing the value of his work as the hall-mark of the silversmith or the mint stamp of the coiner, making it a standard of value by which other products of the same kind are judged, and giving it an enviable position in the community in which it circulates. If, however, his personality is of the wrong kind, it will none the less be stamped upon his work and the effect will be visible in many and various ways. It is a good thing to note the tendency of photography at the close of this notable year of a notable century and to feel, as we must, that its trend is distinctly upward and its tone sound and healthy. We believe that this is largely due to the influence of individuality in the work of its later years and that its continued progress will depend more upon the cultivation of this feature than upon any other one element in the case. Looking back to the work of Mr. Landy, for instance, we may find significant evidences of its effect upon the development of photography in the best work of almost every successful operator since his "seven ages of man," and equally true is it of many more than he, who, by impressing their best powers and energies with intelligent enthusiasm into the daily work of their lives, have often unconsciously risen to the foremost rank and elevated their profession by their own successes.

How are we to continue our growth, and in what way may any individual among us profit best by the lessons of the past, is an important question, and one which we believe has only a single answer—by study and intelligent, persistent application. Study—not only into the mechanical and chemical features of our business, but also into the history of our own profession, that we may know the conditions under which the successes of our predecessors were achieved. Study, into the economical features of our surroundings, so that we may work out a fitting scheme by which to bring our business into harmony with the business conditions of our community. Study, so that we may lead the artistic tastes and instincts of those about us to depend upon our taste and judgment, to lean upon us a little and to feel that as the family physician is an authority upon the laws of nature as they apply to the human system, so we should be an authority in matters of an artistic and pictorial nature. All this means work; it means reading, and then after the study, or, rather, along with the study, should come application. A theory is valuable only in so far as it has been put to practical test; and the photographer may be full of theories, good in themselves, but which will be useless to him unless he knows how, instantly, to apply them to the solution of some problem in his every-day business. Our own work is a factor in our success, in the fact that it is an enduring witness for or against us and will speak in no uncertain tone when compared with that of others. Let us therefore propose as a Christmas toast to the profession for this year 1900: To the man behind the business; as he grows in ability and wisdom, may his prosperity increase, and may his progress ever be toward the betterment of his own condition and the elevation of his profession.

Items of Interest

DR. J. M. EDER, whose investigations and discoveries in the field of photographic work have been most valuable, and whose contributions to the literature of photography are so important, has been honored with appointment to the position of High or Aulic Councillor to the Emperor of Austria, and has received in addition the decoration of the Iron Crown. This mark of recognition is noteworthy, and we offer our hearty congratulations to Dr. Eder upon his well-merited advancement.

* * *

The recent painful and very serious accident to Monsieur Charles Gravier, of Paris, while sitting for his portrait before an automatic picture machine in that city, is much to be deplored. From the reports of the accident it seems that an excessively large charge of flash powder was used and that it must have been exploded very close to the face of the sitter. The result of this unfortunate combination has been to cause a marked impairment of the sight and the formation of a film over the retina of the eye, which oculists consider to indicate a partial disintegration of the retina, recovery from which they fear is almost hopeless. The accident will be the means of saving others from similar misfortune if it is taken as a warning against too close contact with large quantities of this very brilliant illuminant which, when used properly, makes an excellent servant, but which, used without caution, becomes a very bad master. The Bulletin's readers will sympathize heartily with M. Gravier in his affliction.

* * *

The New Jersey Aristotype Company, in order to increase its facilities, has removed its plant from Bloomfield, N. J., to Nepera Park, N. Y.

* * *

The Bureau of Publicity of the Pan-American Exposition has just issued a very complete booklet descriptive of the enterprise to be held at Buffalo next year. The booklet contains forty-eight pages, with one hundred and twenty-one titles and eighty-two illustrations. The publicity up to the present time has been piecemeal, bringing out the various features as they have developed, but an examination of this booklet gives to the reader a very comprehensive idea of the splendid character of the Exposition.

* * *

An international exhibition of art photography is announced to be held at Groningen (Netherlands) from March 16 to April 1, 1901, under the auspices of the Daguerre Amateur Photographic Society. No charge is to be made for entry, and awards will consist of diplomas and medals. Entry blanks and full particulars may be had by addressing Mr. N. de Jager, Secretary, Groningen, Netherlands.

ANNOUNCEMENT is made by the publishers that the *Photographic Times* is to be reduced in size to the dimensions of the standard magazines and that its subscription price is also to be reduced from $4 to $2 per year. In other respects the journal will remain unchanged, continuing its photogravure frontispiece and illustrations. Mr. Walter E. Woodbury is to resume the editorial management of the *Times*, which his past experience of over six years in the same position renders him especially well fitted to conduct.

◆

SOME months ago The Security Trust and Life Insurance Company offered a very attractive series of cash prizes for the best photographs of the best subjects for a calendar for 1901. The contest has closed and the prizes have been awarded as follows:

First Prize, $200.—Rev. Cornelius W. Morrow, Norwich, Conn.

Second Prize, $100.—William W. Chambers, Philadelphia, Pa.

Third Prize, $50.—Mrs. Harvey L. Blaisdell, Denver, Colo.

Fourth Prize, $40.—Miss Nellie Coutant, Crawfordsville, Ind.

Fifth Prize, $35.—Rodriques Ottolingue, New York City.

Sixth Prize, $25.—Geo. S. Becker, Buffalo, N. Y.

Seventh Prize, $20.—Walter E. Bertling and Max G. Beierl, Buffalo, N. Y.

Eighth Prize, $15.—Marshall H. Reon, Pittsburg, Pa.

Ninth Prize, $10.—Emma Louise Williams, Hartford, Conn.

Tenth Prize, $5.—Curtis Bell, New York City.

Judges were: Messrs. Prentice Treadwell, C. H. Davis and Rudolph Eickemeyer, all of New York.

The competition was confined to amateur photographers of the United States and Canada.

◆

THE Photographers of Indiana have effected the organization of the Photographic League, the object of which is the advancement of photography. A banquet and business meeting is announced, to be held at Indianapolis, on March 16th, to which all members of the profession in the State will be invited, and, it is hoped, to build up a strong and valuable organization. The officers are: President, George Holloway; Vice-President, Ben Laramar; Secretary-Treasurer, J. H. Clark.

◆

THE first annual convention of the Pacific Northwest Photographers' Association was held in Portland, Oregon, November 25th–28th, and is pronounced to have been an unqualified success. This association is made up of photographers from Idaho, Oregon and Washington. A. L. Jackson, of Tacoma, was elected President for the coming year, and the other officers elected were: H. D. Traver, of Salem, First Vice-President; Ed. Curtis, of Seattle, Vice-President for Washington; S. Aune, of Portland, Vice-President for Oregon; H. C. Meyer, of Boise, Vice-President for Idaho; Charles Butterworth, of Portland, Secretary and Treasurer. Tacoma failed to secure the next meeting, Portland winning after a good-natured contest.

OZOTYPE.

By T. W. Edmondson.

Of the various methods of obtaining permanent prints which have been introduced to the photographic world in recent years, one of the most attractive and most easily worked is the ozotype process, invented by Mr. Thomas Manly about two years ago. It is a radical modification of the carbon process; and, while not likely to supersede that beautiful process, it is considerably more reliable, and leads to more satisfactory results in the hands of the amateur.

Mr. Manly's advance on the ordinary carbon process consists in sensitizing the transfer paper instead of the tissue itself. The image obtained in this way has the power of rendering unsensitized pigmented gelatine insoluble after the latter has been suitably treated with a dilute solution of hydroquinone and acetic acid, and, consequently, the unpleasant operation of sensitizing the gelatine tissue with hot potassium bichromate is entirely done away with.

Reproduced from Ozotype print by the Author.

The manipulation of ozotype is simplicity itself. Drawing paper, or any other good paper,* is first coated with a weak (about 2 per cent.) solution of gelatine. When dry it is rendered sensitive to light by brushing it over with the following solution:

Potassium bichromate	¼ ounce.
Manganous sulphate	½ "
Water	4 ounces.

This operation may be carried out in gas light, and, as the paper dries readily, it may be cut up at once into desired sizes and stored for future use. If carefully protected from light and damp, it will keep for two or three months.

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*The writer uses a stout, fairly smooth paper, known as "herbarium paper."

To obtain what may be called the "formative image," the sensitive paper is exposed under a negative in the ordinary way until all the detail shows clearly in dark brown on an orange ground. The image is fixed by washing the print in water until the high lights become white; but care should be taken not to allow the prints to remain too long in the water, as the image becomes weakened by prolonged washing. The print is then dried, and in this state may be kept indefinitely, and pigmented when the operator pleases.

The pigmenting is carried out as follows: A piece of insensitive carbon tissue of the same size as the print is soaked for about a minute in a bath composed of

Glacial acetic acid	40 minims.
Hydroquinone	30 grains.
Water	40 ounces.

While the tissue is in this bath, the print is introduced below the surface of the liquid with the image facing the pigmented gelatine of the tissue, and allowed to become well wetted. The print and the tissue are then lifted out face to face, squeegeed together on a hard flat surface, and allowed to dry.

The temperature of the bath for smooth papers should be about 70 degrees Fahr. In the case of rough papers, however, it is necessary to soften the gelatine rather more in order to secure good contact on squeegeeing, and the temperature of the bath should be about 80 degrees Fahr.

To develop the picture, the double sheet, consisting of print and tissue, when dry, is soaked in cold water until quite limp, and is then placed in water at a temperature of about 105 degrees Fahr. Immediately the pigmented gelatine will begin to ooze out at the edges; and, in about a minute, on raising the back of the tissue by the corner, it will be found to separate readily from the print, to which the pigmented gelatine has now become attached. As the unaffected gelatine becomes loosened and dissolves, the picture will slowly make its appearance, and the print should be gently laved with warm water until the picture is sufficiently developed. When this point is reached, the print is transferred to a solution of alum to harden the gelatine. It is then washed in water and dried.

If there is any tendency for the finer detail to be washed away before development is complete, the addition of a slight trace of ferrous sulphate (about 1 grain) to the "acetic bath" will counteract this.

Prints made from hard negatives will give softer finished pictures if the hydroquinone is increased from 30 to about 40 grains. On the other hand, the bath for a print taken from a flat, weak negative, should have the hydroquinone reduced to 20 grains, and the ferrous sulphate should be omitted altogether.

In the writer's experience, the red chalk and terra cotta tissues give the most unsatisfactory results with normal initial prints. Indeed, in some cases, so slight has been the action of the formative image on the tissue that the pigmented gelatine has been washed away completely in the course of development. To obviate this, it has been found expedient to prolong the time of printing to about twice the normal length.

The considerations which should influence the amateur in taking up the process may be summed up as follows : In the first place, the initial image is visible, and the process of the printing can be followed with ease ; the print thus obtained may be kept indefinitely and pigmented at pleasure. There is no necessity for a double transfer of the pigmented gelatine in order to obtain a picture which is not reversed ; and, lastly, the carbon tissue used in the final stage of the process is insensitive, and consequently there is no waste of tissue from inability to use it immediately after sensitizing, as in the carbon process—all very weighty considerations with the amateur who often has to snatch the brief intervals of other duties for photographic pursuits."

Reproduced from Ozotype print by the Author.

THE PHILADELPHIA SALON AS IT APPEARED TO AN OBSERVER.

THOSE who rule the destinies of "high-art" photography in America have sat in solemn council and have chosen some 120 prints as worthy of being admitted to public view; a number of photographers whose qualifications are beyond cavil, or who do not approve of being judged, have contributed almost as many more; and these 204 photographs, hung in the gallery of the Philadelphia Academy of Fine Arts, constitute the third Philadelphia Photographic Salon.

Much has been said as to the wonderful advance which has been made by these men, as compared with the professional photographers of America; and this exhibition affords an opportunity of judging the value of the statements made.

Of the 200 prints exhibited, only 80 can, by any stretch of courtesy, be called portraits, the remainder are figure studies or out-door scenes. From these eighty we can learn the strength and the weakness of the new school.

These advanced workers evidently prefer revolution to evolution, and in endeavoring to create an "art" have succeeded in creating an extreme, and at times a crazy, fashion. They have decided that professional photography is beyond salvation, and have never discovered that its salvation has actually been achieved—and from within. It is so very easy—flippantly easy—to find cause for fault, and those who have condemned the professional photographer have no excuse except crass ignorance. There is lots of bad professional work—but there is good. And there is much good. The idea that professional photography is "bad" has led these workers into strange blunders. They have gone on the idea that the reverse of bad must be good, and that therefore if their work is totally unlike the usual thing, why, then it must be "artistic." Therefore, as cardinal sins in a photograph are likeness, and clearness, and detail, and retouching, they get rid of these. Never mind about likeness; instead of calling it a portrait, it can be termed a "study," and will be the better for it. Clearness and detail, with half a dozen other possible beauties, are sacrificed at one fell swoop by the choice of a paper. By sensitizing his own paper the photographer can get any degree of roughness or texture or color for his support. By the use of gum-bichromate he can get any extreme of granularity or indistinctness. So we have little prints, not larger than a cabinet, formed of such big splotches of gum that three of them will make a nose, or a dozen of them will cover a face. It is no question of being critical; it is a simple impossibility to escape from the texture. Step back from the photograph, as though it were a fragment of a great enlargement, and the grain follows you as far as you can see any meaning in the picture. We hear of brush development; subordinate detail, so that the "motif" of a picture can be seen. Motif! save the mark! They give us pictures with an eye and a nose, a forehead and a chin. The mouth is a smudge of black; and sometimes, too, the eye. The hair and background and coat are all one vast mass of daub. The hair blends into the background, and there is no suggestion of any dividing line. It is mounted on a patch of brown wrapping paper to make a mat a quarter inch all round the picture, and this mat is in turn mounted on a much larger one of some green or grey tint. A fancy signature is appended, and maybe it is framed.

To speak plainly, it is so very, very easy to make an "artistic" picture. A print is made, from an execrable negative, and the artist fakes, and dabbles, and restrains, and coaxes; and at last he has got something. He did not know exactly what he was after; but he knew he was after "something." And by the time he has got it he has pored so long over it that really he does not know how to judge it. So it is mounted, and some kindred soul comes along and says, "I like that; it appeals to me"—and off it goes to the Salon and to fame.

There is good work at the Salon; work which is sound photography and good art. And there is work that would give hints in pose, etc., to the wide-awake professional. But any one, from a dozen of our leading photographers, could choose six—or twenty—of his best portraits, and they would hold their own—and more—with the best of the Salon work. Francis Watts Lee has two lovely things, one of them a portrait of two little sisters. Miss Watson—whose work is all good—shows one of the daintiest and most delicate—withal strong—heads that photography has produced. The "Portrait of a Baby" by Alfred Stieglitz is a delightful bit; and he has one of a mother and child looking out of a window, which should gladden the heart of any photographer who can appreciate a good thing.

A longer list could be made of the bad work than of the good. But the good—from two or three workers—is very good, and that because they are not in the immature stage of revolt against "photographic quality." But the chief hope for the new school is in its utter weakness. So much has it gone off the track that it will only save itself from utter grief by a thorough recantation. It has been said—and hoped—that the amateur would raise the level of the best professional work. He must, instead, if he would live, reap his wild oats by a course of humble discipleship under the leaders of the men he has despised.

IMOGEN, A NEW DEVELOPING SUBSTANCE.

By J. Gaedicke.

THE Actien-Gesellschaft für Anilin-Fabrikation, of Berlin, Germany, has added to the series of organic developers a new one which has been put on the market of photographic industry under the name of Imogen. It is in the form of white powder and is easily soluble in water.

It may be asked whether it is necessary to increase the number of developers recently brought out. But seeing that one person obtains the best results with rodinal, another with eikonogen, others again with amidol, metol, hydrochinone or pyro, it must be acknowledged that the employment of a certain developer is a matter of taste governed entirely by the individuality of the operator, so that there never can be too many developers, because every developer has its particular properties and peculiarities, and on this ground therefore the introduction of Imogen is justified.

Undoubtedly this new reagent will soon gain many friends, who will obtain the best results by using it.

The qualities of Imogen were at first tested by means of the sensitometer, because by this a definite numerical result can be obtained, which is evidently superior to judging a negative, obtained by merely exposing a plate on an ordinary landscape or other subject: Firstly, because the operator has a definite amount of light, and, secondly, because the character of the image can be better examined by the successive density of each square recorded.

The normal exposure for a sensitometer scaled with 1 to 16 layers of tissue paper was 120 "meter candles" seconds, *i. e.*, an exposure of 120 seconds was necessary at a distance of 1 meter from a standard 1 candle-power. The number 16 thus obtained indicates a highly sensitive plate; numbers 12-13, on the other hand, plates of medium sensitiveness. The plates employed were of medium sensitiveness.

The preparation of the solutions is very simple.

Solution A is prepared by adding to a solution of 10 ounces of water and 1 ounce of soda sulphite crystals $\frac{1}{3}$ ounce of Imogen. If anhydrous sulphite be used, take only half the quantity prescribed of the crystals. These experiments were with crystals.

Solution B is prepared from ordinary crystallized washing soda, which is dissolved in double its quantity of water.

It is better to prepare both solutions with hot water so as to expel all the air, thus rendering the solutions more stable.

The developer for normal exposure consists of Solution A, 1 part, to which half a part of Solution B is added.

If the solution is freshly made, and the plate is correctly exposed, the image appears in fifteen seconds, and is fully developed in four minutes.

The sensitometer image was developed after normal exposure of 120-meter candles seconds. The numbers 1 to 3 showed a dark shade, but could not be distinguished. The numbers were legible up to 15, but could only be copied up to 13. Thus there were 11 numbers, which could be printed from. The density was very heavy, and the color of the deposit was a warm black.

To test for under-exposure, half the normal exposure was given, *i. e.*, 60-meter candles seconds, and the developer was modified by diluting Solution A with an equal quantity of water and half the quantity of the soda solution, for example:

Solution A, 1 ounce; water, 1 ounce; Solution B, ½ ounce.

The image appeared in forty seconds, and was developed in four and a half minutes. The sensitometer No. 12 could be copied, but No. 1 contrasted well against No. 2, so that twelve shades able to be copied, could be counted. This shows that better negatives will be obtained by scant than by abundant exposure.

For over-exposure, the plate was exposed double the time given for correct exposure, *i. e.*, 240-meter candles seconds, 1 drop of potassium bromide 10 per cent. solution being added for every cubic centimeter of the developing solution.

The image appeared in thirty-five seconds, and was fully developed in four minutes. The number 12 could still be printed ; the numbers 1 to 3 had nearly the same appearance, so that there were ten grades that could be printed, but the image was less soft and poorer in color. The abundant addition of potassium bromide, while degrading the finest impressions of light, did not retard development so much as was to be expected. A very large quantity of potassium bromide can therefore be added to Imogen.

A special advantage was obtained when, by normal exposure, the development was made up with increased quantity of alkali and potassium bromide, namely, 1½ parts of A and 1 part B with 60 drops solution of potassium bromide to every 55 cubic centimeters of solution. The image appeared in forty seconds, was developed in five minutes, and showed a gradation of Nos. 1 to 11 or 12, the great amount of alkali having a favorable influence upon the designs in the high lights.

In comparison with rodinal, Imogen brings the image out better, and has a more powerful action. The character of negatives developed with Imogen is similar to those obtained with hydrochinone.

The new developer works very brilliantly. Even with plates exposed on landscapes during dull and rainy weather, negatives full of contrasts were obtained.

If the negative is too dense, treatment with persulphate of ammonia will reduce it. This ought to be done immediately the fixed negative has been washed, the advantage being that the density is reduced, and at the same time any remaining hypo will be eliminated, so that, after this process, a short washing will do.

The following deduction can be made from this examination of Imogen :

1. That it is a very energetic and active developer.
2. It produces brilliant negatives.
3. The deposit is of good density.
4. It is especially valuable for short exposures.
5. It does not affect the fingers.
6. The time of development is normal, even if an abundant amount of potassium bromide has been added.
7. The best results are obtained, if development is made slower by diluting the developer with water, or if a large amount of alkali is employed, in addition to potassium bromide.

All copy for January issue must be in our hands not later than December 15th.

FIGURE STUDIES.

THE possibilities of pictorial composition and expression, possessed by photography, are not as yet comprehended to anything like their full value, and the future growth of photography will, we believe, be largely along these lines. The following article by Mr. T. Lee Syms, of England, is reprinted from the *Photogram*, which journal, in turn, credits it to the *Photographic Record*, the organ of the Manchester (England) Photographic Society.

Its suggestions are good and may be applied equally well by the amateur enthusiast or the professional worker.

Mr. Syms says:

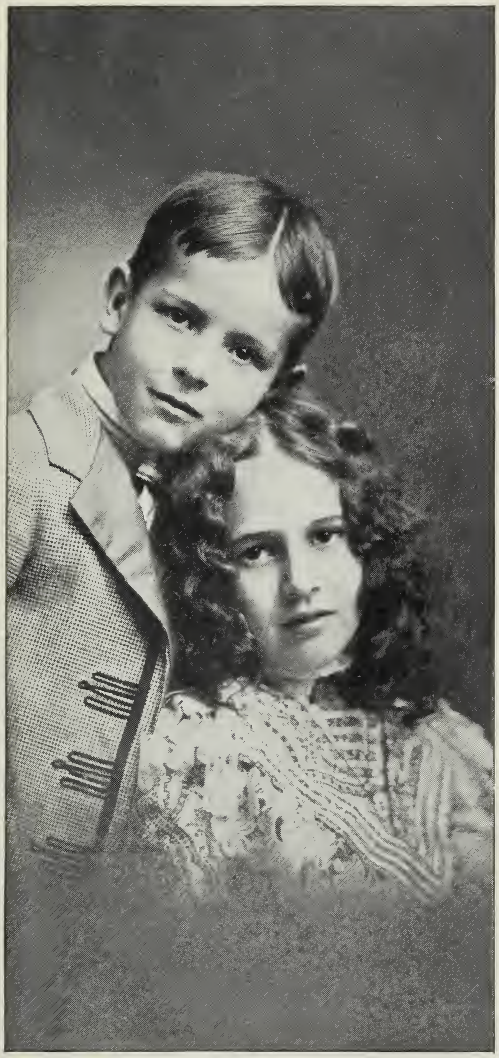
"In figure work we cannot very often go out and snap a subject by the roadside, then come home and ponder over a title for an hour or so. For the great majority of such pictures the subject certainly wants some thinking out, and we must start out with a definite idea of what our picture must be.

"A good subject very often composes itself, or, speaking more correctly, you enter into it with such enthusiasm that it seems to do so. It is, therefore, worth while to try and get oneself into the habit of being always on the lookout for such, and in a short time it will come naturally. Unthinkingly you will analyze almost everything you see from a pictorial point of view, and many times a day something good will be found, which, if made a note of, will soon give you a number of subjects for selection. Subjects are a great stumbling-block to beginners, and I would suggest a start being made by trying to illustrate something, no matter what, from a nursery rhyme to some particular part of a local industry. There is no end of material. Take a foundry, for instance; make a series of exposures of the different processes gone through—or, with a child or two, illustrate 'Mother Hubbard' or some such thing in the kitchen.

"After the subject has been decided upon, we require it to be composed or arranged in such a way that it tells its tale pleasantly without irritating us too much. Here we shall have to fall back to a great extent on the painters of subjects similar to the one we intend working on. A study of their work, preferably engravings (on account of their being resolved into monochrome), will give us an idea of how to treat the subject in general.

"Do not attempt to literally copy an engraving. Such a method is bound to fail; but a bit of good practice would be to choose a picture and try and rearrange it as many times as possible, still preserving the same motive as in the original. Such practice, together with a study of Burnet's 'Art Essays,' and an intelligent interest in the print-seller's windows, should soon make anyone at all sympathetic conversant with all the simple rules of composition.

"A series of rough pencil sketches should be made, no matter how roughly (it does not require an artist to do this), indicating the chief lines of the picture, particular care being given to the placing of the principal point of interest, giving it due prominence and making it



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tell. The lighting has much to do with this, especially in interiors, where the lines are more or less lost in the shadows, as the works of the old Dutch masters show, especially those of Rembrandt.

"In open air effects, more care must be given to line, the light not being under control to anything like the same extent that it is in a room. I find evening the best time for outside figure work, as greater breadth is to be got on account of the long shadows, especially when taken against the light.

"On the whole, interiors are the easier to manage well on account of the control over the lighting. A favorite method in working in an ordinary room is to use very soft diffused light for the general illumination of the subject, and using a strong ray of direct light to give the necessary sparkle and snap ; it may be daylight or flash. This is done by covering the window with tracing paper, muslin or some such material on the outside, if the window is in the picture, and then opening a small space, either in that or some other window or door, to give the high-light. It can only be got by trial, or if flashlight be used (and it is altogether, I think, the easier method) give the exposure, say, five seconds to the diffused light and finish with the flashlight. The lamp I use is a very cheap one, costing about 2s. 6d., and consists of a small cup for the magnesium, surrounded by a groove containing methylated spirit. On pressing a ball the powder is blown through the spirit flame. Care must be taken that no direct light from the flash falls on the lens. I find a biscuit tin with one glass side very useful for this. The light is enclosed on all sides but one, and can be directed almost in any direction; it must come from a possible and probable source.

"In lighting a figure group, due regard must be paid to the color of the costumes, and, if special dresses are not used, one must bear in mind that reds and yellows come out darker and blues lighter than they appear to the eye (of course isochromatic plates and screens are out of the question for inside work). If care is not exercised in this particular we shall probably have the principal figure taking a minor position and a secondary one coming out to the front.

"Taking it all round, I find it best to either select a few costumes, with due regard to their photographic qualities, or have them made up specially of varying shades of gray. It is, however, essential that they be well worn and characteristic; as to me nothing is so bad as obviously dressed and posed models in a picture. Much pure white drapery should be avoided, a rinse in a weak yellow dye greatly improving such from a photographic point of view. Children should be dressed in plain, simple things, clothes that can be romped in without fear of damage and of a dark cream for the lighter one. A special pinafore or two and a bonnet and hat are worth investing in, as sometimes a splendid model, unsuitably dressed, will be found, and, if the right things are at hand, a minute or two works quite a transformation. On no account let the models look as if they had just stepped out of a band-box. For older models, a blouse or two of unobtrusive patterned calico and a skirt or so, dyed at home to the shade required, and not too much starched and ironed, will be found useful; and if the pattern is not too pronounced, will not be recognized as old friends in every picture, as they will look quite different in every change of lighting.

"Always strive to make the clothes look part and parcel of the picture. The same remark applies to the accessories. Many otherwise excellent prints are spoiled by the models being palpably made up, and out of all harmony with their surroundings.

"If you have access to an old garden, then a model in a cream muslin dress and a Gainsborough hat should suffice for many studies in the style of Marcus Stone in painting, or Alexander Keighley in photography. Again, there are any quantity of subjects to be got in a farm yard. Some of the finest things I have seen in photography have been done in the doorway of an old barn, the general gloom of the interior forming a splendid background for the figures. Even an attic, the more dilapidated the better, and a figure, will make good material to practice on. In fact, any surroundings, if treated in a sympathetic manner, will give us results at once instructive and pleasing.

"The apparatus necessary to success need not be expensive, or differ from that required for ordinary work. The great thing to bear in mind is the character of the result required. In architectural work, for instance, sharp definition is required, practically all over the plate, while for figure work it is neither necessary nor desirable. Therefore, in choosing a lens for such work we should get the longest focus possible to be used in the circumstances; not only on account of the perspective given, but for the fact that such lenses have not the great depth of focus found in those of shorter focus. I find the new Stigmatic type of lens very good when used at open stop. They are rapid, which is a great advantage when working indoors, and give one plane tolerably sharp, and all behind is pleasingly soft. But for nearly all subjects a R. R. will do all that is required as regards speed, and at a pinch a landscape lens can be used, while for outside work the landscape lens is as good as anything. I very often use the back combination of a R. R. at a fairly large aperture.

"Before making the exposure have everything ready. Arrange the accessories in their places according to the preconceived idea or sketch; see that they take a subordinate place and are not as prominent as the figures. Look to the lighting and try and get broad effects, as spottiness is fatal to repose in a picture; and endeavor to keep everything simple. Breadth in lighting can be got by keeping the masses of light and dark together, by the suitable dressing of models and tone of furniture, and arranging them together, and by keeping the source of light well under control. The smaller the light area, the broader the effect.

"The choice of a suitable background is a great help to breadth. It is a great temptation, I know, when we see a picturesque cottage interior, to get it all showing perfectly in the print. If the picture is to be a view of the cottage, such a course is justifiable, but if the figures are to be the center of interest, then the cottage is simply a setting and should be kept as such.

"If a portion of the background comes out too light, a clothes-horse covered by a shawl or something of that kind, placed between the light and that particular portion, will generally remedy it by throwing a cast shadow upon it; but in any case, keep the background as a background, and never let it vie with the subject.

"In working in an ordinary room the floor generally gives some trouble, coming out too light. A cast shadow will generally put that right, or it can be toned down in the printing. I always like doing it in the exposure, if possible, and I strongly recommend these screens for throwing shadows in the required places. When everything is ready, and not till then, pose the models in their previously decided places and expose as quickly as possible. Never let them have time to get bored; better let a slight error go than tire the sitters by rearranging them. Don't pull them about, but try and get them to take an interest in the subject, and they will probably fall into better poses than those in your sketch.

"If possible arrange for the taking of two or three subjects of a somewhat similar type, by varying the models in the important positions, and not making the same accessories too prominent. The resulting pictures may be made quite distinct from each other, but for every subject don't use all the models if you can do without any of them.

"Models are a source of worry, I must admit. It is best to use someone you are used to and can talk to if required. Before taking out new models practice with them a time or two, and explain all about the aims of the picture, so as to impress it on their minds, and insist on your view of the matter being carried out. If the model gets a chance to lead, it is all up with the picture, the ideas of most people of picturesqueness being very hazy. Don't allow any tidying up if the model is a local one. Hair oil and a clean collar are not wanted for a picture, and the usual Sunday suit is something awful from an artistic point of view.

"Country models require careful handling. They nearly all have an aversion to posing in their working clothes, but a little persuasion and a promise to take a picture in their other dress if the first is not satisfactory, will generally manage it.

"In developing this class of picture, aim at producing a thin negative, and do not over-develop. A thin negative is much easier to dodge in printing, if that is necessary.

"The printing and framing calls for no special remark any more than does that of landscape. If the negative prints too sharply and the detail is too evident, a piece or two of celluloid between the paper and negative will do the necessary softening.

"In conclusion, start with a definite aim; remember that the picture should tell its own tale; keep everything simple and broad; and, above all, exercise plenty of patience, and the results will, I hope, give you as much satisfaction as any other kind of photography."

MODERN INTENSIFICATION METHODS.

By Dr. J. M. Eder.

AMONG the practically applied intensifiers for bromide of silver gelatine plates those play a particularly important part which strengthen the negative with black color, because the strength of the picture can be judged best in this way.

Of the older intensifiers the one with mercury-bromide (*i. e.*, mixture of chloride of mercury and bromide of potassium), and subsequent blackening with sulphite of soda, particularly meets with much favor. Recently a new kind of intensification with iodide of mercury and sulphite of soda was made known by Lumière and Seyewetz. A solution of 1 part iodide of mercury and 10 parts sulphite of soda (free from water) is added to 100 parts of water, and the fixed and washed dry plates are put into this solution. In consequence of a changing action between iodide of mercury and silver, the darkly colored iodide of mercury precipitates ($2Hg\,I_2 + 2Ag = Hg_2\,I_2 + 2Ag\,I$), which latter is decomposed by the action of sulphite into mercury and iodide of mercury, for which Lumière and Seyewetz give this equation formula:

$$Hg_2\,I_2 + 2\,(SO_3\,Na_2) = Hg + Hg\,I_2\,(SO_3\,Na_2)\,_2.$$

Wash and treat with alkaline pyro, hydrochinon, paramidophenol or any other developer; the color becomes dark; the iodide of silver is to be transposed into metallic silver, and the intensified negative becomes constant. Another new intensifier has been put into market under the name of "Agfa Intensifier." This method, which was worked out by Dr. Andreson in Berlin, is based upon the application of the double salts of mercury sulphocyanide. The intensifier liquid is placed on the market as colorless, concentrated solution, which is diluted before use with nine times the quantity of water. The fixed and washed bromide of silver gelatine plates become gradually denser in this solution and blacken with a gray-black color at prolonged action to a high degree, much the same as with mercury bromide and sulphite.

With the Agfa intensifier there is no separate blackening, which is required by the ordinary mercury intensifier. The manipulation is therefore not only simpler, but the effect of intensification can be controlled much easier than in the separated blackening operations. The Agfa intensifier is excellent, and the question is only, how its effect compares with the Lumière iodide intensifier and the older mercury bromide and sulphite intensifier. For this purpose I made some blackening measurements with the Hartmann micro photometer on bromide of silver gelatine plates, which were exposed in the Scheiner sensitometer, developed with oxalate of iron and fixed.

1. At first I was going to prove, by figures, how the usual mixture of chloride of mercury and bromide of potassium (1 part chloride of mercury, 1 part bromide of potassium and 50 parts of water) acts in comparison to a chloride of mercury solution (1:50). The plates were made with Scheiner sensitometer. The bleaching of the silver film with pure chloride of mercury proceeded much slower than after addition of bromide of potassium, and at subsequent treatment with sulphite

of soda the plate treated with the mercury solution containing bromide became much denser than the one treated with pure chloride of mercury solution; the latter had intensified very little. Both kinds of intensified plates had suffered a little in the covering of the more delicate shadows under pretty long action of sulphite of soda (evidently in consequence of the dissolving effect of sulphite of soda upon chloride of silver and bromide of silver). The former, however, dissolves much easier; the intensifying effect is therefore small.

2. Lumière's iodide of mercury intensifier colors the negative, slowly but continuously, black with a shade to brown, which increases somewhat in the subsequent washing. The prescribed treatment with developer (I used pyro-soda) effected dark coloration, but a slight red fog appeared during washing after intensification, but the intensifying action is very considerable. More covering can be obtained than with mercury bromide and sulphite.

3. The Agfa intensifier is to be preferred to the Lumière intensifier, because only one solution is required. Further, because the danger of a formation of real fog does not exist, as is the case in the Lumière intensifier. The blackening can be extended very far with the Agfa intensifier, so that the mercury bromide intensification is surpassed in this regard, and that of Lumière's is almost reached.

The following table gives the blackening figures of the intensified plate strips:

DETERMINATION OF THE BLACKENING OF DRY PLATES IN DIFFERENT INTENSIFIERS.

Exposure of the plate in second-meter candles.	Blackening of the original negative not intensified.	Intensification by Chloride of Mercury and Sulphite of Soda.	Intensification by Chloride of Mercury and Bromide of Potassium and treatment with Sulphite of Soda.	Lumière intensification with Iodide of Mercury.	Andresen's Agfa intensifier with Mercury Sulphocyanide.
1.0	0.36	0.32	0.33	0.37	0.37
1.26	0.41	0.35	0.39	0.43	0.43
1.60	0.47	0.40	0.45	0.52	0.55
2.05	0.51	0.45	0.57	0.63	0.72
2.61	0.64	0.57	0.71	0.75	0.90
3.3	0.73	0.68	0.87	0.93	1.10
4.2	0.80	0.77	1.07	1.18	1.31
5.4	0.87	0.87	1.27	1.40	1.50
6.9	0.97	0.97	1.47	1.65	1.70
8.8	1.07	1.09	1.69	1.89	1.85
11.2	1.18	1.20	1.85	2.03	1.94
14.3	1.32	1.34	1.98	2.15	2.00
18.2	1.41	1.47	2.07	2.27	2.19
23.2	1.48	1.55	2.12	2.33	2.28

These observations demonstrate that the old method of intensification with chloride of mercury and bromide of potassium, and consequent blackening with sulphite of soda, is sufficient in most cases, and is always to be depended upon, but that the Afga intensifier, on account of its simplicity and the possibility of obtaining greater blackenings, is superior, and is therefore to be considered a real advance in intensification methods. Translated by

HENRY DIETRICH.

THE EVOLUTION OF A PICTURE.

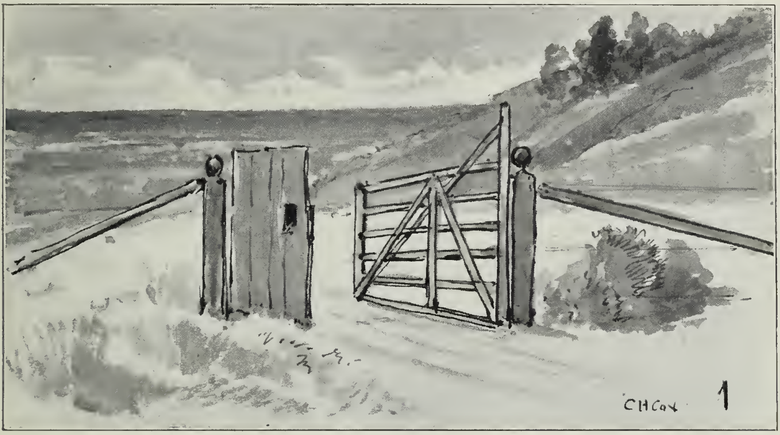
By Prof. Charles H. Cox.

From *The International Annual* for 1901.

WE hear frequently from those who may be looking at Nature that what they see is a "perfect picture," expressing thus some sense of pleasure mentally perceived and appreciated and derived through the eye. There is evidently, therefore, some feeling touched by certain objects and their arrangement as a harmonious whole which others, differently presented, fail to awaken. The recognition of a "picture" is apparently greatly intuitive, and we seldom find the mind trying to analyze its parts or to account for their influence. An examination of the question "why?" leads to very interesting results; but the further the subject is pursued, the more widely it seems to open its possibilities and scope of inquiry. The power of perceiving beauty, at least in a pictorial sense, would appear to be gradually developed, and to partake greatly of the nature of a mental evolution rather than that innate faculty usually termed "good taste." The trained eye of the artist recognizes quickly what an unpractised observer may not see at all until interpreted and set before him in a new language, that of art. It will be well, therefore, to consider the growth of a picture from the artist's standpoint in preference to the usual method of trying to explain to an untrained intelligence "how to judge of a picture." Books and essays have been written over and over again, with the object of giving some principles by which the above object can be attained. I have never yet met with one entirely satisfactory; in fact, they amount only to a relation of how the author may judge of a picture, and not a definite plan by which every other mind may be guided. You cannot formulate rules to govern individuals differing in knowledge, thought and association without being met with the reply, "Well, I don't know much about art, but I know what I like," and this covers the question so nearly that it is difficult to answer it satisfactorily. To such objections the best way is to put them in touch with the artist rather than with the critic; so I shall endeavor to trace the origin and progress of a picture from the former's standpoint, letting the result speak for itself. The origin of every picture is, and must be, Nature, and as apprehended by the sense of sight. To this we may add that it must be truth as well or it is of no value. The old question of "What is truth?" may be, as far as art is concerned, answered by the reply, that it is what is conveyed to the mind by the senses and recorded in a new form and language interpretable by others. In this form it becomes relative and not absolute, as our senses are fallible. Indeed, they are fallible to a much greater degree than is usually recognized. It follows from this that mind and judgment must differ materially, but a "picture," originating thus, is, first, a mental sensation only. Its translation into "art" is entirely another process. The mental picture depends on a feeling of pleasure or interest in what is seen. As soon as a true artist feels this another modification takes place, viz., an analysis of the cause of these feelings.

Soon the artist perceives that there is something which dominates the whole, and that is the story which he has to tell to others. Centering all his interest in this, he begins to recognize that certain objects are subordinate to others, unnecessary to the chief idea he wishes to convey.

The law of "principality" is followed by the necessity of selection and rejection. This is one of the photographer's difficulties, though not insuperable. As soon as arrangement enters into the picture, laws of composition begin to be thought over, and "leading lines," *i. e.*, those which insensibly direct the eye to the center of interest, are sought out and recorded, all to enhance the value of the dominating story. Now, the story itself may be of absorbing interest, but it is, in a picture, confined to one moment. It is not like a poem (though it may be one), which has beginning and end and sequence throughout, but is a record of one moment only, and this has to suggest both past, present and future. Hence knowledge and imagination are both called in, the personality of the artist begins to be stamped on his work, and his picture is Nature imbued with his own humanity, and appeals more or less directly to the common humanity of all. Form, color and handling are but methods of expression. The greatness or the reverse of a picture is often lost in study of method and technique, which are more the skill of the hand than of the brain. They are the way truth is expressed, not the truth itself, but are frequently confounded with it, to the exclusion of all recognition of the higher qualities which constitute a picture.

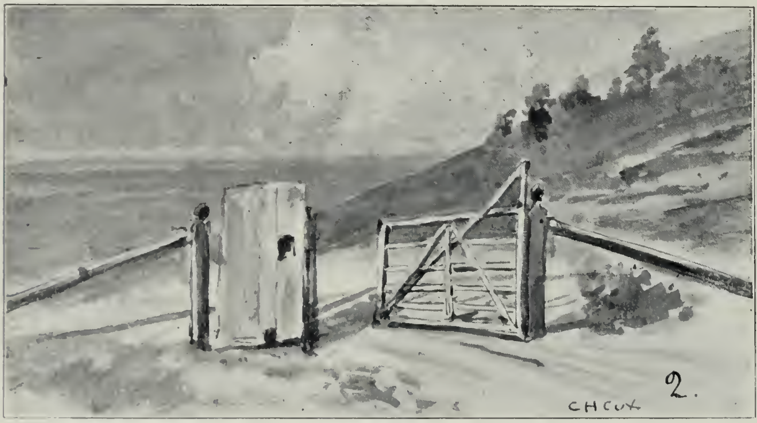


One requisite quality that enters into the creation of a picture, mentally and actually, is the expression of light. It is, as it was in the creation of the world, the first necessity; it carries with it all form, perspective, color, and all possibility of imparting art to others. Therefore, technically, the first study must be light, and the greater the power to convey the sense of it to others, the greater the picture itself. We have then these elements as the evolution of a picture:

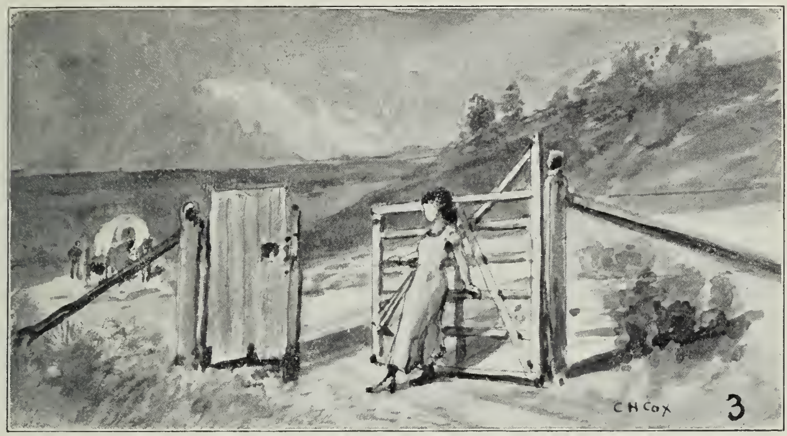
1. Mental impression. 2. Elimination of non-requisite parts. 3. Centralization or concentration of idea. 4. Translation into a new

language. 5. This language is a new expression of light, and is a record, available to all, of nature and truth in another form, as recognized by the mind of the artist.

The wideness of the scope of these would appear to be limited only by the power of the senses plus the capabilities of the human mind to apprehend the knowledge they convey. But beyond knowledge is the power of suggestion—the most difficult and perhaps the highest quality of all. In it is comprehended the subtle appeal of mind to mind. All the mystery of what cannot be expressed can thus be conveyed, and the greatest artists have always aimed at something that appeals beyond the mere senses, and may be considered to reach the soul itself; how and why we cannot tell. To some the message is dumb, to others it may be full of the deepest emotions of which the heart is capable. Hence, art is as wide as human nature, and its evolution will keep pace with the latter. There is no finality, but the possibility of an ever-rising standard of all comprised in the nature of both toward a higher condition of being for each.



Lately it was my lot to be located in some of the finest scenery of Colorado, whence I overlooked the vast plains. Near at hand was a gate, which interested me very little beyond knowing whether it was open or not. Least of all did it strike me as a "picture," but one evening it suddenly dawned upon me that it did appeal to me as such. The plains had usually absorbed my attention, but they were obscured, and the evening light centered on the gate and rails. I began to study the reasons why such common objects assumed an interest, and the longer I looked the more I found. Eventually, incidents of passing figures, etc., added to the feeling, and I painted it, trying to convey what sentiment could be felt in so ordinary a theme. I have appended some studies, showing how the picture evolved itself from something originally uninteresting. They may fail to convey this to others, but the fact remains that the commonest objects can be endowed with pictorial qualities if the mind be only trained to apprehend them. Then others are able to see, when the interpretation is put before them, what they otherwise would never have been able to notice—one mind speaks to another—and "pictures" that will live and tell their story when we are gone, become part of the inheritance of posterity. That is one of the privileges to which a true artist may look forward, and his duty and responsibility are to see that he use the opportunities in his power wisely and well. He need seek for no other or a greater reward than that his work should live after him, to be the testimony of his inner life if in it he has recorded his highest aspirations, based on Nature and truth.



REFERENCE TO ILLUSTRATIONS.

No. 1. A gate on a road, leading down to the Plains, Colorado. If any interest is on the subject it is rather in the distance than in the gate and foreground.

No. 2. A change in the light has brought the gate into relief, while the distance is less visible than before. The concentration of interest is more now on the gate, and the subordination of other details has given it some pictorial qualities.

No. 3. Further concentration of effect and elimination of detail in other parts than the foreground have emphasized the gate, etc., as the leading object of interest. To this the addition of its connection with human life has brought in a new element, that of a story in which it plays a part, and suggestions of life under certain conditions bring the whole more into a completed "picture," evolved from the simplest of materials, and under ordinary observation apparently incapable of exciting any special notice from an artistic standpoint.

* * *

Photographic Postal Cards.—The production of photographic postal cards is simple enough, but there is only the one disagreeable accompaniment which is, that ink will not adhere uniformly to the paper afterwards, because the sensitive film will not always form the best and most agreeable material for writing. This defect can easily be remedied. After the postal card is thoroughly dry, cover the part to be used for working with white chalk, and rub off again with a piece of soft paper or cotton. On the card so treated you can write as well as on ordinary paper.

THE EVOLUTION OF THE MODERN LENS.

Address of the President, Mr. T. R. Dallmeyer, F. R. A. S., Etc., before the Royal Photographic Society, London, October 9, 1900. Reprinted from "The Photographic News."

THE following able and valuable address forms such a concise and accurate history of the development of the lens from its discovery to the close of this century, that we feel the necessity of printing it in full, as we believe that every reader of the Bulletin should have the information it contains, without abridgment.—[Editors.]

"The present status of photography as a science, in common with all other sciences, has been brought about by the classification of facts, their sequence and significance. Photography being scarcely a century old, enables us to trace with considerable accuracy both the chemical and optical progress of the science from the earliest qualitative experiments to the present quantitative scientific basis.

"The close of this century would be a particularly appropriate period at which to review this progress. The subject, however, is so vast that it is quite impossible in the short time occupied by an address to attempt a survey of the subject as a whole, or to do *full* justice to any particular branch. I shall, therefore, endeavor to give you a brief account of the evolution of modern lenses, as I feel that this is a subject upon which you may have expected me to discourse. The interaction of chemical and optical work at the commencement of the century is so peculiarly interesting that I have included a few references which emphasize their early interdependence.

"Chemical changes due to the action of light have been known for upwards of two thousand years. About 350 b. c. Aristotle recognized that only those parts of plants were colored in which the white sap was acted upon by sunlight. Dioscorides, too, gave instructions for bleaching oil by exposing it to light. Later on, these observations were more frequent, and in 25 b. c. Vitruvius, in the seventh book of his 'Architecture,' makes several references to the fading or alteration of color by light, and in Chapter IX he calls attention to the fact that in open places, where the light of the sun and moon penetrate, vermillion becomes black.

"The study of the formation of images by the action of light is, however, essentially a development of this century. At its commencement the ordinary camera lens was a simple double convex, for although history shows that the Galilean telescope had been employed in the camera obscura for visual purposes, its use seems to have been either forgotten, or to have been found too feeble in intensity. I shall refer to this later on.

"The first public exhibition of photographs was held at the Royal Institution in 1802, when Wedgewood showed photographs on paper and white leather; these were either unfixed or only partially fixed. A full account is to be found in the first edition of Hunt's 'Researches on Light' (1844). In the following year, 1803, Wollaston, who was in close touch with the frequenters of the Royal Institution, described the action of light upon paper prepared with gum guiacum. [This seems to have been largely the basis of the subsequent work of Niepce, for in a letter dated April 20, 1817, Niepce says that he has seen in a chemical book certain details as to the action of light on guiacum resin, and from his account these changes are evidently those described by Wollaston.]

"In 1812 Wollaston followed on with what was then considered a great advance in optical means, by employing a deep meniscus lens in place of the double convex he had formerly used ('Cambridge Philosophical Transactions,' 1812). Brewster also describes and illustrates Wollaston's camera with the meniscus lens in his 'Optics' (1831) edition

"From letters of Niepce in 1816 regarding his cameras and lenses it appears that he also was at work in 1813, and in 1816 he describes his photographic camera. Later in the same year he had the misfortune to break his lens, and seeking for another he employed one taken from a microscope. This lens was evidently of greater intensity than the one he had formerly employed, as he states at this period that he can take photographs without direct sunlight, and changed his term 'heliography' into 'photography.' Between 1816 and 1826, Niepce took many photographs on metal, glass and paper; full details are extant in many places. Officially published letters and details by Niepce are contained in the 'History and Practice of Photogenic Drawing' by Daguerre in 1839 (Smith, Elder & Co.).

"In 1826 Niepce commissioned his cousin, Colonel Niepce, to call upon Vincent and Charles Chevalier to obtain certain articles, among them a good camera. Vincent and Charles Chevalier had become famous by the combined Wollaston's meniscus and Newton's reflecting prism, which soon became the almost universal means of showing the camera obscura effects in a tent. The tent form of camera obscura appears to be due to L'Abbé Nollet, who describes it and claims it as his own in his 'Leçons de Physique Experimentale' (1775). Nollet points out that the ordinary box camera gives a very small picture, unless the box is made inconveniently long, and a lens of corresponding great focal length is used. He does not appear to have been familiar with the use of the Galilean telescope for the purpose of obtaining an enlarged image with short camera extensions.

"Colonel Niepce showed the Chevaliers examples of Niepce's work which much surprised them, and this visit led to the introduction of Niepce to Daguerre. The Chevaliers (the son Charles being apparently the more active) constructed achromatized meniscus lenses as a result of communications from Niepce and Daguerre. It was Brewster who originally indicated a method of achromatizing the prism-lens. In Chevalier's camera obscura tent, when the field of the image was small compared to the focal length of the lens, he turned the convex side of the prism towards the object, but in order to obtain a larger field of view, the concave side of the prism was necessarily turned towards the object. [In a manual published by Daguerre in 1839, he illustrates his achromatic meniscus composed of a double convex crown glass cemented to a nearly plano-flint, with the diaphragm placed in front of the slightly concave surface. This form of landscape lens was manufactured for many years, and is, I believe, still used.]

"In 1834, Charles Chevalier applied for a patent for a double objective, which appears to have been something like a Ramsden's eye-piece, and to have been intended chiefly for use as a telescope object glass, diminution of spherical aberration being claimed. In the specification he describes doubtlets compounded with achromatized concave lenses, and apparently he united two of these concaves to make a negative doublet for use as an eye-piece in the Galilean telescope.

"The first doublet specially intended for photography does not appear to have been made by Chevalier until 1840. These doublets were reported upon in detail by the Société d'Encouragement, who awarded him a platinum medal, on the ground of less spherical aberration and adjustable focal length. The latter was brought about by an adjustment in the separation of the component lenses. It is interesting to note that a document exists purporting to be signed by Charles Chevalier, and witnessed by Jombard, describing these adjustable doublets, and although no formulæ or particulars are given, the employment of the iris diaphragm is mentioned for the first time.

"The year 1840 was signalized by the advent of the Petzval portrait lens. At this juncture--a most important one in the history of photography, and particularly in lens-construction—it is necessary to examine how far the theory of the subject had progressed. So far as I am aware, the only contribution which contained any reference to lenses constructed for the camera obscura occurs in an early classic contribution by the late Astronomer-Royal, Sir George Airey, on 'The Spherical Aberration of Eye-pieces of Telescopes,' contributed to the Cambridge Philosophical Society in May, 1827. The author here treats of three spherical aberrations—distortion, curvature of field, and astigmatism. It is evident from his writing that he considers that lenses hitherto constructed owed their forms to 'General Rules of Workmen,' and at the conclusion of the thesis he gives a number of practical rules which conform to his theoretical investigations. There is a short passage referring to the best forms of single lenses, and the situation of the diaphragm 'most favorable to the formation of a distinct image' in the camera obscura; they are a plano-convex with the diaphragm placed in front in either of two positions, or a meniscus lens, the diaphragm in this case being placed behind the lens in either of two positions. He shows that if a concave spherical surface is used to receive the image it will be accurately formed upon it. Sir George Airey points out that Dr. Wollaston's periscopic camera obscura conforms to the theoretical conditions.

"With the exception of this notable contribution, which threw important light upon optical theory generally, there was no other advance until the epoch-making investigations of the late Professor Petzval. In 1843 Professor Joseph Petzval, in an address to the Archduke Ludwig of Austria, described how he had raised the subject of the correction of photographic lenses from the plane of experiment to a definite, scientific and mathematical inquiry. He recited how the errors in the formation of images by lenses, due to the employment of spherical surfaces, might theoretically be eliminated. The outcome of this research was to place a portrait lens of high intensity and good covering power in the hands of photographers and photographic investigators. In so doing he earned for himself undying fame in the science, and conferred upon his generation one of the most important means of raising the status of photography. Petzval's theoretical investigations formed the basis of some subsequent elaboration by Seidel, and up to the present date the Petzval-Seidel theory of the construction of lenses holds its own.

"Petzval's first theoretical results were brought out in 1840 by the house of Voigtlander. Petzval had not only calculated the portrait lens, but also a non-distorting landscape lens. The latter, however, did not make its appearance until 1858, and will be referred to later. Soon after the appearance of the first portrait lenses and the publication of Petzval's theory, manufacturing opticians in every country adopted this form of portrait lens, which held its sway until midway in the sixties.

"In order to trace the evolution of modern lenses from this period onwards, it will tend to least confusion if they are placed under the following headings:

"I. Landscape lenses.
"II. Portait lenses.
"III. Triple lenses.
"IV. Doublets.
"V. Telephotographic lenses.

"I. Landscape Lenses.

"The first, as we have seen, was Wollaston's periscopic lens, an account of which he contributed to the 'Cambridge Philosophical Transactions' in 1812. The next was the early form of single cemented lens composed of two glasses already described as having been constructed by Chevalier for Daguerre. In 1857 Voigtlander issued the landscape lens calculated by Petzval in 1840. It was known as the 'orthoscopic lens,' and was hailed with delight as the first non-distorting landscape lens introduced. Unfortunately the claims for its entire freedom from distortion and spherical aberration were not borne out, for it was found that it produced 'pin-cushion' distortion, in contradistinction to the 'barrel-shape' inherent in the landscape lenses hitherto employed with the diaphragm situated in front of the lens.

"In 1857 the late Thomas Grubb patented a view lens consisting of a meniscus crown lens cemented to a meniscus flint lens, with the diaphragm placed in front of the former. In this lens the correction for spherical aberration was more perfect than in those hitherto constructed, though it was not strictly aplanatic. Grubb claimed that: 'It forms more distinct images of objects than either the ordinary view lens, or the front compound lens of a portrait combination, as occasionally used by photographers as a view lens. I do not, however, limit myself in the use of my improved lens to that of taking views, or of being used alone. The lens admits of entering with advantage into combination with one or more other lenses of either similar construction to itself or of other or ordinary constructions.' Thomas Grubb, so far as I can trace, did not employ himself to similar combinations to form a doublet, but his statement in his patent that there was this possibility subsequently gave rise to the suggestion that Steinheil's aplanat and my late father's rapid rectilinear were due to Grubb's single landscape lens, although it seems to be more reasonable to look upon these as an evolution of the symmetrical non-distorting periscopic lens of Steinheil.

"In 1859 Goddard constructed a landscape lens which he termed a 'double periscopic.' It was composed of a double convex crown cemented to a double concave flint placed in close proximity to a meniscus crown, the concavities facing one another, and the components being mounted in a single cell with the diaphragm placed in front of the cemented combination. This lens is of particular interest as being the first published attempt to eliminate the 'barrel-shaped' distortion due to the position of the diaphragm with respect to the lens, when composed of a single cemented combination. The late Mr. Traill Taylor states that he was in possession of the only lens of this form made by Goddard. About the same time Goddard introduced a lens which he termed a 'combination landscape lens,' which I have included under this heading, although it might possibly also be included under doublets. The lens itself consisted of two combinations, the anterior being a double convex crown cemented to a double concave flint, the posterior combination being composed of a double concave flint mounted in juxtaposition to a meniscus crown. The back combination was practically of infinite focal length, and Goddard suggested the substitution of various anterior achromatic combinations, of different focal length, to be used in conjunction with the posterior combination, so as to obtain various focal lengths. Goddard also claimed freedom from distortion and flatness of field. The late Mr. Traill Taylor stated that he had access to Goddard's work-book after his decease, but I have failed to trace any particulars as to the intensity at which this lens worked. It seems in the main to have been an attempt to perfect Petzval's orthoscopic lens.

"The next important advance was due to my late father, J. H. Dallmeyer, who in 1865 patented his wide-angle landscape lens. This lens was the first triple cemented lens, and consisted of a meniscus flint sandwiched between two meniscus crown lenses. It worked at an intensity of *f*/15, and covered with fine definition a greater angle than any single lens hitherto introduced.

"In 1884 I modified this form of lens, and, by employing an extra light flint glass in place of the anterior crown employed by my father, attained the higher intensity of *f*/11. This lens, however, was not designed to cover so great an angle, but, on the other hand, to include a narrow angle destined to give more pleasing perspective.

"In 1887 I constructed a rectilinear landscape lens, which history shows was designed upon similar lines to Goddard's double periscopic. The lens itself differed in that the anterior cemented portion was a double meniscus, in contradistinction to Goddard's double convex crown cemented to a double concave flint.

"It is necessary at this point to make a brief reference to a subject the great importance of which is, in itself, sufficient to have occupied more time than is at my disposal in this address. I refer to the possibilities opened up to opticians for improvements in lenses, particularly in the cure of astigmatism, by the introduction of the new Jena glasses. In the early eighties, experimental research was undertaken by Professor Abbe, an Honorary Fellow of our Society, in conjunction with Messrs. Schott & Gen. to produce new types of optical glass. Until their labors were completed, and the results obtainable in commerce (in 1888), the only glasses which had hitherto been available for the use of the opticians were characterized in general by an uniform interrelation of refractive index with dispersive power, the higher the refraction the greater being the dispersive power. An examination of the new glasses shows that this old order of things was departed from in several instances, and we were given crown glasses, which possess a higher refractive index, but a less dispersive power, than the flint glasses formerly, and still, employed."

To be concluded in January BULLETIN.

GLEANINGS FROM GERMANY.

By Henry Dietrich.

Do Alkalies tone?—An old diapositive, which had been laying for several hours in a mixture of acids, consisting of nitric acid, muriatic acid and sulphuric acid, was washed and put into a concentrated solution of soda, to loosen the gelatine, as the glass plate was to be used. The picture was bleached out completely in the acid bath and attained in the soda bath, a reddish-brown tone. The sharpness of the picture did not suffer in the least and the tone was of a warm, agreeable color. The gelatine did not frill at all and could only be removed with a hot soda solution. The dry plate was developed with pyrogallic acid.

To remove spots from drawings.—If a drawing has an objectionable acidic ink spot, it may be easily removed with oxalic acid by employing a cotton tuft moistened with the solution of the acid and applying it slightly to the spot. If the picture or drawing does not stand moisture, a mixture of equal parts of alum, amber, sulphur and nitre, each finely powdered, is applied. The powder is strewn upon the spot and rubbed softly with a piece of cotton. After a little while it is removed with a brush and the ink spot will be found to have disappeared. Coffee spots are of a purely organic nature and can be removed very thoroughly in the following way: Powdered magnesia or talcum is spread over the spot and this is covered with a piece of blotting paper. Superoxide of hydrogen is then put upon the blotting paper, drop by drop, and is left to act for an hour. This will remove the spot.

Bromide of Silver Pictures Upon a Metallic Support.—A metallic support or underground for photographic pictures is said to be excellently suited as a substitute for the white paper ground. Practically, the execution of this idea seemed to be difficult, except, perhaps, in the carbon process. The firm of F. Bühler, in Germany, manufactures at present a bromide of silver developing paper, which shows a silver, glossy metal ground in place of the usual baryta ground. The pictures produced upon this paper are very clear and have a peculiarly fascinating effect. With regard to thickness, flexibility, etc., the paper shows all the properties of the ordinary bromide of silver paper, and, as a novelty, suitable for many purposes, should meet with a ready introduction.

Achromatic or Apochromatic Lenses in Microphotography.—The requirements of a good objective are particularly put to the test when they are to be used for enlarging purposes. The greater the enlargement, the more readily a defect in the construction can be discovered. The objectives for microscopes have, therefore, to reach the climax of perfection. The non-achromatic objectives are, of course, out of consideration. But the question, achromatic or apochromatic objectives? has not been decided yet.

The apochromatic objectives differ from the simple achromatic ones in showing a higher degree of color purity by concentrating not only two but three different classes of rays in one point, by means of which the secondary spectrum is removed and equally sharp pictures without a colored edge are obtained by application of a white as well as a monochrome (one-colored) spectrum. This color-correction is an uniform one for all zones, whereby the most widely different methods of illumination are possible with large opening, and the natural coloration of the object suffers no change in the picture. The sharpness of the drawing and the brightness of the picture, however, will show no difference in the achromatic or apochromatic objective at otherwise equal conditions.

The good properties of the apochromatic lenses, particularly in the immersion system, with monobrom-naphthalene, have been demonstrated in an excellent manner by the well-known microscopist, van Heurk.

Coloring of Botanical Preparations for Microscopy.—For microphotographic views, the artificial coloring of an object is sometimes of great value, and even a necessity, for instance, when a bacillus culture or bacteria are to be taken. The substances to be colored are first bleached with hypochlorite of soda, which may take up to twelve hours, and then they are washed and subsequently colored. All preparations containing not much woody matter may be colored with hæmatoxyline. This is prepared after the following formula:

Hæmatoxyline	2	grams.
Alcohol	105	cubic centimeters.
Glycerine	90	"
Ammonia alum	2	grams.
Glacial acetic acid	10½	cubic centimeters.
Distilled water	105	"

Dissolve the hæmatoxyline in the alcohol, and the alum in the water, and add the glacial acetic acid to the latter. Now mix the liquids and add the glycerine. The mixture has to be a month old before it can be used.

For coloring, take 30 drops of the solution and 30 cubic centimeters of water and let it act for twenty minutes. After this wash well in distilled water, put the preparation in ordinary water until the coloration has a bluish appearance, and then place it for ten minutes in methyl alcohol. Clear in oil of cloves and mount with Canada balsam. Preparations containing woody matter or fiber may be subjected to a double coloration by proceeding as follows:

Color in a solution of pure carmine	1 part.
Liquid ammonia	2 parts.

To this solution add 96 parts of a saturated borax solution in water, and filter. The coloring takes about five minutes; then wash well in methyl alcohol, and treat the preparation with a solution of—

Muriatic acid	1 part,
Methyl alcohol	20 parts,

until the coloration has a scarlet-red appearance. After this, wash in methyl alcohol.

For the second coloration a solution is made of acid-aniline green in methyl alcohol, 1:250. It is then filtered and left to act for ten to fifteen minutes. After this, wash again in alcohol, until the different parts are visible to the eye. Clear with oil of cloves, and mount with Canada balsam upon glass.

Relative Developing Value of Soda and Potash.—Potash (carbonate of potassium) and soda (carbonate of soda) show very different actions in the developer, the former always being the stronger. To obtain the same strength of action with soda, we have to apply a correspondingly larger quantity. The corresponding equivalent from the atom-weight of both substances was always calculated, but this might not be correct for practical purposes. Mr. M. Pünnett has now taken the trouble to determine the relative proportions by reason of the action which shows itself (bromine absorption), and has come to the following results, corresponding to those formerly mentioned by Bolton :

Crystallized potash	1,000.
Crystallized soda	1,644.
Potash, free from water	0.793.
Soda, free from water	0.609.

Diapositives.—According to Professor Lederer, diapositives can be produced quickly and cheaply by printing upon light-sensitive collodion gelatine-transfer paper in the same way as celloidion pictures. The print should have a somewhat burnt appearance in the shadows, and the high lights should show a little covering. The print is put in a 7.5 per cent. preliminary fixing bath, in which the violet color changes rapidly to yellow. After this, the picture is put into the tone fixing bath, and is then well washed. It is now placed between some sheets of filter paper, to remove the moisture. Now put the picture, film side up, upon a well-cleaned glass plate, which is to serve as carrier, and hold it, pressed to the glass, for some minutes in lukewarm water, in which the gelatine between the collodion film and the paper support softens. The paper support may, therefore, be taken out. Lift the glass plate, with the picture horizontally from the water, smooth and dry. These diapositives are said to color very easily.

Sensitizer for Yellow, Orange and Red.—Notwithstanding the difficulties in working with cyanine plates, this color matter is to the present day a favorite red sensitizer. By a suitable addition to a cyanine solution a color-bath is obtained, which will also give good results for yellow and orange. The following formula of Mothet has proven to be very suitable :

Alcoholic chinoline solution (1:500)	8 parts.
" cyanine solution (1:500)	1 part.
Liquid ammonia	2 parts.
Distilled water	200 "

The ammonia is to be added last to the solution. The bathing time is only one minute, whereupon the plates have to be dried rapidly ; they are durable for about three weeks.

OBITUARY.

IN the death of Mr. Frank Bacon, at his home in Philadelphia, on the 13th of September last, another prominent photographer has passed on to the great majority and the profession has lost another indefatigable worker and brilliant member. Mr. Bacon had been suffering from Bright's disease and had been out of active work for some years, but had never relaxed his interest in photography. He died at the age of fifty-seven years, leaving a widow, one daughter and two sons.

◆

Charles E. Von Sothen, who for nearly thirty years was Government photographer at Willets Point, New York Harbor, died at his home on the 26th of October last. Mr. Von Sothen had been for a long time suffering from heart trouble, to which he finally succumbed at the age of fifty years. He was born in Hannover, Germany, and fought in the Franco-German war, serving as lieutenant on the general staff of the German army. He came of a distinguished family, and was widely known, both in this country and abroad. Mr. Von Sothen's work in recording the flight of projectiles, the action of explosives and military tests of many kinds by means of photography is known the world over, many of his results in this field being unequaled. His loss will be widely felt. He leaves a widow and several children, to whom the sympathy of the fraternity is warmly extended.

◆

James Lett, the well-known dealer and one of the oldest citizens of Pittsburgh, Pa., passed away on October 26th at the age of seventy-two years. Mr. Lett was born in England and came to this country about forty-five years ago. He was the pioneer in the wholesale photographic supply business in Pittsburgh, having occupied the same business location for forty years. A widow, one son and two daughters survive him.

◆

George P. Hall, another well-known and honored member of the profession, died upon the same day, October 26th, after an illness of seven weeks' duration. Born near Troy, Miami County, Ohio, October 7, 1832, Mr. Hall first engaged in the photographic business in Dayton, Ohio, in 1854, and opened his first gallery in Indianapolis the following year. He was subsequently in Muscatine, St. Louis and Brooklyn, moving to Fulton street, New York, in 1872, where his business is still carried on by his son, James S. Hall, under its well-known name of George P. Hall & Son. Mr. Hall's influence and personality will long be felt for good in the fraternity.

◆

Palmer Lanfield Perkins, a pioneer photographer of Baltimore, Md., died on October 1st at the advanced age of seventy-six years. He opened his gallery in 1850, and was active in the business until about ten years ago, when he retired leaving his business in the care of his son.

William M. Godfrey, said to have been the first photographer to come to California, died November 5th, from injuries received from a fall. Mr. Godfrey was seventy-five years of age at the time of his death, and was one of the best-known citizens of his county. His first gallery was opened in Placerville.

* * *

J. P. Hawley, of Appleton, Wis., another old-time photographer, died at his home on October 10th at the age of seventy-seven years. He had been established in Appleton since 1852.

* * *

The death is announced, under date of October 28th, of Mr. Alphonse V. Benoit, of New York.

* * *

Announcement comes to us of the death on October 7th at Geneva, Switzerland, of Mr. Léon Warnerke at the age of sixty-seven years. Mr. Warnerke's investigations into and contributions to the literature of photography during the past twenty years have been most valuable, his work in the study of sensitiveness of dry plates and actinometry will be remembered by all interested in the history of photographic progress.

OUR
Reviewer.
School of Practical Process Engraving.

PHOTOGRAMS of the Year 1900.—" A pictorial and literary record of the best photographic work of the year" is received from the English publishers, and may be said to rank well as to quality when compared with its predecessors. The volume is profusely illustrated with examples of photography, embracing all so-called "schools," with critical analyses of many of the subjects. The progress of the art in the several countries is dealt with by representative writers, and the whole forms a valuable and interesting volume that will prove useful in any photographic library.

The International Annual of Anthony's Photographic Bulletin and American Process Year Book for 1901.—Volume XIII of its series is now published, and fully justifies the many good things that have been predicted of it. Its contributed articles are from the hands of sixty-eight well-known authorities, it is profusely illustrated with a photogravure frontispiece, nearly fifty full-page and over one hundred text illustrations. *The Camera* says of it: "This 1901 'Annual' reaches us a trifle earlier than usual. We have nothing but praise for it, particularly in its class of illustrations, which are symbolical of good and honest photography—the new school being ignored—and it commends itself to the amateur photographer from cover to cover. Such well-known writers as John A. Tennant, F. Dundas Todd, Alfred Stieglitz, F. C. Lambert, M. B. Punnett, Chapman Jones and many others contribute to its pages. "The Evolution of a Picture," by Professor Charles H. Cox, is one of the best lessons in photography and composition that we have read for some time. We should like to give a more extended review of the book, but space forbids it."

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